Exhibit G

MUKESH BAJAJ, PH.D.

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF OHIO
EASTERN DIVISION

OHIO PUBLIC EMPLOYEES RETIREMENT)
SYSTEM, On Behalf of Itself and)
all Others Similarly Situated,)
)
Plaintiff)
)
vs.) C.A. No. 4:08-CV-00160
)
FEDERAL HOME LOAN MORTGAGE)
CORPORATION, a/k/a FREDDIE MAC,)
RICHARD F. SYRON, PATRICIA L.)
COOK, ANTHONY S. PISZEL AND)
EUGENE M. McQUADE,)
)
Defendants)

VIDEOTAPED DEPOSITION OF MUKESH BAJAJ, PH.D.
TUESDAY, SEPTEMBER 26, 2017
MORGAN, LEWIS & BOCKIUS LLP
ONE FEDERAL STREET
BOSTON, MASSACHUSETTS

Reported by: Sandra A. Deschaine, CSR, RPR, CLR, CRA
Job No. 131040

MUKESH BAJAJ, PH.D.
SEPTEMBER 26, 2017

9:25 a.m.

Videotaped Deposition of Mukesh Bajaj, Ph.D., held at Morgan, Lewis & Bockius LLP, One Federal Street, Boston, Massachusetts, pursuant to Notice, before Sandra A. Deschaine, a Shorthand Reporter, Registered Professional Reporter, Certified LiveNote Reporter, and Notary Public in and for the Commonwealth of Massachusetts.

MUKESH BAJAJ, PH.D.
A P P E A R A N C E S:
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Cincinnati, Ohio 45209
BY: WILLIAM MARKOVITS, ESQUIRE

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One Federal Street
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Attorneys for Defendant Richard Syron:
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(Appearances continued)

MUKESH BAJAJ, PH.D.
APPEARANCES (continued)
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(Appearances continued.)

MUKESH BAJAJ, PH.D.
APPEARANCES (continued)
DECHERT
Attorneys for Defendant Eugene McQuade:
Cira Centre
2929 Arch Street
Philadelphia, Pennsylvania 19104
BY: MICHAEL DOLUISIO, ESQUIRE
(Appearing telephonically)

Also Present: Howard Lindenberg, Freddie Mac
Dan Bettencourt, Crowninshield

THE VIDEOGRAPHER: This is the start tape labeled Number 1 of the videotaped deposition of Mukesh Bajaj, in the matter of Ohio Public Employees Retirement System versus Federal Home Loan Mortgage Corporation, in the court United States District Court of Northern District of Ohio Eastern Division, civil action number 408CV00160.

This deposition is being held at Morgan, Lewis in Boston, Mass., on 9/26/2017 at approximately 9:25 a.m. My name is Carlo Barbeiri from TSG Reporting, Inc., and I'm the legal video specialist. The court reporter is Sandra Deschaine in association with TSG Reporting.

Will counsel please introduce themselves.

MR. MARKOVITS: Bill Markovits on behalf of Ohio Public Employees Retirement System and along with me is Dan Bettencourt of Crowninshield.

MR. FRANK: Jason Frank from

Morgan, Lewis & Bockius on behalf of Freddie Mac.

MR. BLANCHARD: Michael Blanchard from Morgan, Lewis and Bockius on behalf of Freddie Mac.

MR. LINDENBERG: Howard Lindenberg, Freddie Mac.

MR. VOLPE: Frank Volpe, Sidley Austin, on behalf of Richard Syron.

MR. GOLDFARB: James Goldfarb, Murphy & McGonigle, on behalf of defendant Anthony Piszel.

MR. FOTIADES: Adam Fotiades, Zuckerman Spaeder, on behalf of Patti Cook.

MR. DOLUISIO: Michael Doluisio with Dechert on behalf of Eugene McQuade.

MR. WAYNE: Rick Wayne with Strauss Troy on behalf OPERS.

THE VIDEOGRAPHER: Will the court reporter please swear in the witness.

MUKESH BAJAJ, Deponent, having first been satisfactorily identified by the

production of his California driver's license and duly sworn by the Notary Public, was examined and testified as follows:

MR. MARKOVITS: Jason, before we begin, do you want to recite the stipulations?

MR. FRANK: Sure. And before I do that, I think that, for the sake of the record, we should be clear that some of the participants today are -- are participating by telephone, and those are Adam Fotiades, Mike Doluisio, and Rick Wayne, as I understand it. If I'm wrong, please someone on the telephone feel free to speak up.

With respect to the stipulations, Mr. Markovits, you can correct me if I'm wrong, but I believe the parties have agreed that all objections, except as to form, and all motions to strike will be reserved until such time as the testimony is offered to the Court. An objection on behalf of one defendant will be good for all defendants, and the

witness will have 30 days from receipt of the final version of the transcript to review it, make any corrections necessary, and sign it.

EXAMINATION BY:
MR. MARKOVITS:

Q. All right. Dr. Bajaj, as you heard, my name is Bill Markovits. We've met before. Could you state your name for the record, please?
A. Yes. My name is Mukesh Bajaj.
Q. What is your home and business address?
A. My business address is 1999 Harrison Street, Suite 2700, Oakland, California, 94619, I believe. My home address is 4615 Rockingham Court, Oakland, California, 94619.
Q. And Dr. Bajaj, you understand you're under oath?
A. Yes.
Q. And that this is sworn testimony just as at trial?
A. Yes.

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Q. And I know you've testified in 50 or more matters. So, unless you'd like to hear them, I'm going to forego the standard explanations of what a deposition is and deposition rules. Fair enough?
A. Sure.
Q. You and I met at a deposition in this case in January of 2013; correct?
A. Yes.
Q. And when I last spoke to you in 2013, it was in part about a report you had issued in 2012 that addressed Dr. Hallman's opinions with regard to market efficiency; correct?
MR. FRANK: Objection.
A. I'm sorry, can you repeat the question.
Q. Yes. When I last spoke to you in 2013, we talked in part about how you addressed Dr. Hallman's opinions with regard to market efficiency; correct?
A. Yes.
Q. And your report of September 1st, 2017, that we'll be discussing, in part,

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today, deals with you addressing Professor Feinstein's opinion with regard to market efficiency; correct?
A. It addresses Dr. Feinstein's --
THE REPORTER: I'm sorry, sir, what was that?
A. It addresses Dr. Feinstein's opinions in his report, yes.
Q. Which include opinions with regard to market efficiency; correct?
A. Yes.
Q. Have your views of what is required to establish market efficiency changed since your report in 2012?
A. Not with regards to economic aspects of market efficiency.
Q. With regard to any other aspect?
A. I've become aware of Halliburton -- the most recent version of Supreme Court's Halliburton decision, which, as I understand, explicitly permits Defendants to challenge the presumption of reliance by questioning whether the alleged disclosure defects affected the stock price. That's my layman's

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description of what I understand.
Q. And other than that change which was brought about by Halliburton II, a change with respect to some cases that was brought about by Halliburton II, has your view, as an economist of market efficiency, changed at all since 2012?
MR. FRANK: Objection.
A. Well, as an economist, my views evolved as literature in financial economics evolves. I think there has continued to be additional evidence in economics on -- arising from the great recession as to how markets can sometimes cease to function well.
Q. Did that change your view of market efficiency?
MR. FRANK: Objection.
A. Well, it's informed my views.
Q. Did it change your view? Listen to my question, Dr. Bajaj. And for Mr. Goldfarb's benefit -- he chided me last time for not saying this until towards the end of the deposition, so I'll say it at the beginning -- please answer my questions.

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Listen carefully to my questions and answer my questions, then maybe we'll get out before the rush hour that we were talking about before we began the deposition.
MR. FRANK: Objection. Dr. Bajaj has been answering the questions, but please feel free to pose another.
Q. Did any literature since 2012 -- I'm not asking whether it informed your views or supported your views -- I'm asking: Did any literature or anything else change your views with regard to what is required to establish market efficiency since you issued your report in 2012?
MR. GOLDFARB: Objection.
A. No.
Q. Your answer was, "No"?
A. Yes.
Q. Thank you. Has your view of the relevance of the Cammer and Krogman factors, with respect to a determination of market efficiency, changed at all since your report in 2012?
A. No.

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Q. In providing your view of what is required to establish market efficiency, do you take into account the legal standard to be applied?

A. As I understand it, yes.

Q. How do you do that?

A. Well, I inform myself in conversation with counsel and through readings and literature. I follow, what, if any, changes that would have implications for economic analysis have been made. And, of course, when I get involved in an assignment, then I clarify my understanding with counsel.

Q. And you've --

THE REPORTER: "With counsel," did you say?

MR. MARKOVITS: "With counsel."

THE REPORTER: Okay.

BY MR. MARKOVITS:

Q. And you've done so in this case?

A. Yes.

Q. Your opinion regarding market efficiency is based upon what a financial economist would be satisfied, as to proof of

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market efficiency; correct?

MR. VOLPE: Objection.

A. Yes.

Q. And for example, as a financial economist, I believe you've indicated that if the market is efficient, in your opinion, an event study is necessary; correct?

A. No.

Q. You can prove market efficiency without an event study?

A. Well, it depends on what form of market efficiency you're talking about.

Q. Let's talk about the form of market efficiency that's relevant to this case. Can you prove that form of market efficiency --

MR. FRANK: Objection.

Q. -- without an event study in your opinion?

MR. FRANK: Objection.

A. So it's my understanding that the form that is relevant to this case would be the semi-strong form of market efficiency. And semi-strong form of market efficiency, by

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definition, requires proof of cause and effect, which is conducted through an event study whenever feasible.

Q. So then, correct me if I'm wrong, to paraphrase what you said, you believe that a semi-strong form of market efficiency is -- is required. And in order to prove that, you need an event study; correct?

MR. GOLDFARB: Objection.

A. I think I answered your question accurately, in that, the definition of semi-strong form of market efficiency requires you to examine cause and effect, which is what an event study does; and so, whenever it is feasible to conduct an event study, that would be required.

Q. And if it's not feasible, could you still prove semi-strong market efficiency?

MR. FRANK: Objection.

A. I can't answer that question since I've not had an occasion to deal with such a situation. And I don't have an opinion on that kind of a hypothetical circumstance.

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Q. In using an event study to prove a semi-strong form of market efficiency, you would generally, as a financial economist, use a 95 percent confidence interval; is that correct?

A. Can you repeat your question, please?

Q. In performing an event study to prove a semi-strong form of market efficiency, as a financial economist, you would generally use a 95 percent confidence interval; correct?

A. I don't understand your question as you worded it. I understand the 95 percent significance, but I don't understand your question as you worded it.

Q. In performing an event study, there's a number of procedures that you go through. But one thing you're doing is looking for statistically significant price impacts on given event dates; correct?

MR. FRANK: Objection.

A. In examining cause and effect, you are testing what material cause is associated

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with statistically significant price effect, which is measured through a statistical analysis. And the usual level of significance for such an analysis is 95 percent.

Q. So the usual level of significance is 95 percent, which is a fairly high level of statistical significance; correct?

MR. FRANK: Objection.

A. I can't speak to whether it's high or low. It depends on your perspective, but that's the usual standard of certitude --

Q. And it's --

A. -- in statistics.

Q. And it -- and it's a higher level of certitude than more likely than not; correct?

MR. FRANK: Objection.

A. I don't know how to interpret "more likely than not." In the context we are talking about, are you saying more likely than not in the call -- in the context of cause and effect, or whether there is an effect, the degree of certitude is more

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likely than not?

Q. Well, let's take either. Let's take one at a time. In -- in looking for statistical significance, a 95 percent confidence interval is a higher standard than simply looking for more likely than not statistical significance; correct?

MR. FRANK: Objection.

A. I don't think in statistics, level of significance is thought of as more likely than not. It is generally thought of as a probability of making what statisticians call Type 1 error and Type 2 errors, so --

THE REPORTER: I'm sorry, called what?

A. Type 1 error or Type 2 error. So, in this context, 95 percent level of significance simply means the observed effect is of large enough a magnitude that there is 5 percent or lower chance that it was observed as a random phenomena without there being any driving force.

Q. What confidence interval would you have used if you just wanted to prove that

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it's more likely than not, that it was not caused by random forces?

MR. FRANK: Objection.

A. As I said, statisticians generally do not think of the issue -- as you both said. You could say that, if it's a coin flip, 50/50 chance as to whether an observation is significant. Then you could use a P-value of 50 percent. In that case, you would as likely -- you would be as likely to correctly conclude that you've observed an effect as -- no, you haven't. It's just a random chance that manifested itself.

Q. And what if you used a P-value of 51 percent?

A. Well, then there would be 51 percent chance that you've actually observed an effect, and 49 percent chance that it was just a random observation.

Q. So if you used a -- instead of using a confidence interval of 95 percent, if you used a confidence interval of 51 percent, you could conclude, based upon that, that it was more likely than not that it was not --

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that your result was not based on random observation?

MR. FRANK: Objection.

A. I think what you probably meant to say was level of significance of 51 percent, rather than confidence interval --

Q. All right.

A. -- which is --

THE REPORTER: "... rather than confidence," what?

Q. Interval.

A. Interval -- which is a very different concept. Is that correct? Did you mean to say "level of significance"?

Q. I'll go with that.

A. Okay. So could you repeat your question?

Q. So if, instead of using a 95 percent level of significance, you used a 51 percent level of significance, that would still provide that the result is more likely than not, not the result of random forces?

MR. FRANK: Objection.

A. I think you could say that.

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Q. Do you know whether the legal standard for proving market efficiency for purposes of applying the Basic presumption has changed since your report in December of 2012?

A. Besides the issue we talked about a little while ago regarding rebuttal of presumption, it's my understanding that market efficiency for reliance purposes is based on informational efficiency and semi-strong form version of market efficiency, just as it was at the time I issued my report in 2012.

Q. You heard from the videographer that this case is pending in the Northern District of Ohio. Are you familiar with what circuit the Northern District of Ohio is in?

A. I've heard about it. I can't say that I can recall it.

Q. It's the sixth circuit. And let me ask you then as a follow-up to that: Are you familiar with the sixth circuit law regarding the standard of market efficiency that's required to satisfy the Basic

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presumption?

A. No, I'm not aware of any distinction that applies to sixth circuit in connection with the issues we've been talking about.

Q. Okay. Would it make a difference to your opinion if the sixth circuit applied a different legal standard for determining market efficiency for the purpose of the Basic presumption than the economic standard upon which your economic opinion is based?

MR. MARKOVITS: Bless you.

MR. FRANK: Objection.

A. My opinion is, of course, based on economic standard, as informed by my understanding of the legal framework. And I am not aware of any particular sixth circuit law that is inconsistent with my understanding of the legal principles that guide the economic analysis.

Q. As you sit here today, do you have any idea whether -- bless you --

THE REPORTER: Sorry.

Q. -- whether the sixth circuit does

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or does not apply the Cammer-Krogman factors in determining market efficiency?

A. I'm not a lawyer, and I have not informed myself of differences, if any, in this regard in sixth circuit versus another circuit.

Q. Would it affect your opinion if the sixth circuit did apply all of the Cammer-Krogman factors in determining market efficiency?

** MR. FRANK: Objection.

Q. Bless you.

A. In my report that I have offered, I have already assumed that courts consider all of the Cammer-Krogman factors of market efficiency, so I don't understand your question in that light.

Q. So if that's the case, then sixth circuit law, if they did apply all the factors to a determination of market efficiency, that wouldn't affect your opinion; correct?

MR. FRANK: Objection.

A. As I've said, I already assumed

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that the relevant court would consider all of Cammer and Krogman factors, given their probative value as discussed in my report.

Q. But your report doesn't address Professor Feinstein's opinions with respect to the Cammer-Krogman factors with the exception of Cammer Factor 5; correct?

MR. FRANK: Objection.

A. I don't think that is correct, and I can refer to my report to point you to where it does discuss Dr. Feinstein's opinions on various Cammer-Krogman Factors, including Cammer Factor 5.

Q. Okay. We'll go over that in a little bit. Following the dismissal of the case in 2013, when were you contacted about resuming your work on the case?

A. On or about November, December of last year is my recollection.

Q. Did you review the decision of the sixth circuit?

A. I think I did in the beginning. I'm not a hundred percent sure.

Q. Do you have a new engagement

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letter? I know last time we talked about your prior engagement letter. Did you enter into a new engagement letter?

A. No, we are working under the same preexisting engagement letter that was in effect when I submitted my report in 2012.

Q. Your rates have gone up a little though?

A. Yeah, there is a usual increase in rates about once a year.

Q. During the course of your most recent engagement, have you communicated with anyone at Freddie Mac, other than, perhaps, Freddie Mac counsel?

A. No.

Q. Have you communicated with any of the individual Defendants during the course of your most recent engagement?

A. No.

Q. Have you communicated with any lawyers other than the lawyers for Freddie Mac during the course of your engagement?

MR. FRANK: Objection.

A. Not in connection with my work in

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this case.

Q. In connection with your work in other cases?

A. Of course.

Q. Which lawyers who were working on this case have you communicated with -- with respect to other cases?

MR. FRANK: Objection.

A. No, I think you misunderstood my answer. What I said was, I have, of course, communicated with other counsel with whom I'm working on other cases. I'm not working on any other cases with counsel that I'm working on -- working with on the Freddie Mac case.

Q. Okay. You're billing your time at $1050 per hour; is that correct?

A. Yes.

Q. Have you been paid for any of your work since the resumption of your engagement?

A. Yes.

Q. How much have you been paid?

A. I understand that -- that you are entitled to invoices. I don't have the numbers in my head. So maybe you could just

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look at the invoices or you could ask me questions. Once you look at the invoices, I'd be happy to answer those.

Q. And the invoices would show what you've been paid to date?

A. I think so, yes.

MR. MARKOVITS: Jason, do we have those invoices?

MR. FRANK: We do.

MR. MARKOVITS: All right. At a break, can I get those invoices?

MR. FRANK: You definitely can.

MR. MARKOVITS: Thank you.

BY MR. MARKOVITS:

Q. And would those invoices show, generally, how much time you've spent working on this matter following appeal, with the exception of deposition preparation?

MR. FRANK: Objection.

A. I haven't seen the invoices that counsel is going to turn over to you, but I presume there would be full set of invoices. And generally, our invoices are issued at the end of a calendar month for work through the

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end of the previous calendar month.

Q. Okay. And you're working with other people at Navigant on this engagement as you did the last session we talked?

A. Yes, several of my colleagues from Navigant are assisting me on my work.

Q. And those invoices would reflect both your time and the time of your colleagues at Navigant?

MR. FRANK: Objection.

A. That's my assumption, but let's see the invoices when you get them.

Q. All right. Following your report, which is dated September 1st, 2017, have you done any work on this matter?

A. Yes.

Q. What work have you done since September 1st?

A. Primarily, I have reviewed materials in preparation for my deposition today.

Q. Other than reviewing materials in preparation for your deposition, did you do any additional work?

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MR. FRANK: Objection.
A. While repeating some calculations, reviewing calculations, I reviewed all of that as -- in connection with preparing for this deposition, only that kind of work.
Q. Did you meet with anybody to prepare for your deposition?
A. Do you mean a Navigant colleague or do you mean somebody else?
Q. Well, let's start with other than counsel, did you meet with anybody to prepare for your deposition?
A. Yes.
Q. Who did you meet with?
A. I met with a few of my colleagues in connection with my preparation for this deposition.
Q. What was the purpose of those meetings?
MR. FRANK: Objection.
A. Sometimes to gather material; sometimes to review some calculations; sometimes to brainstorm, ask questions.
Q. Did you meet with counsel to

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prepare for your deposition?
A. Yes.
Q. On how many occasions?
A. One occasion.
Q. When did this take place?
A. Yesterday.
Q. How long did you meet for?
A. Maybe six or seven hours.
Q. Who did you meet with?
A. I met with Mr. Frank. I met with Mr. Blanchard and Mr. Volpe and Mr. Linberg (sic).
Q. You've reviewed the Third Amended Complaint in this case; correct?
A. Yes.
Q. You understand that, in part, the allegations of the Third Amended Complaint are that the Defendants made material misrepresentations and omissions relating to Freddie Mac's exposure to credit risk; correct?
A. That's generally consistent with my understanding, but I'd appreciate having the Complaint in front of me, so I can be

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careful about the verbiage that I agree with or not.
THE REPORTER: About the "verbiage I," what?
THE WITNESS: I agree to or not. Can we take a break?
MR. MARKOVITS: Sure.
THE WITNESS: Okay.
THE VIDEOGRAPHER: The time now is 10:00 o'clock. We're off the record.
(Recess taken at 10:00 a.m. to 10:12 a.m.)
THE VIDEOGRAPHER: The time now is 10:12. We're on the record.
BY MR. MARKOVITS:
Q. Dr. Bajaj, before we broke, I was talking to you about the Third Amended Complaint. And I want to ask you: Do you understand that part of the allegations of the Plaintiffs in this case are that the Defendants made material misrepresentations and omissions relating to Freddie Mac's adherence to its underwriting guidelines?
A. You know, it sounds somewhat familiar. But, as a lawyer, you delve into

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this terminology all the time, I don't. So it would helpful to me if I could have the Complaint in front of me.
Q. When you did your price impact analysis, what complaint-related allegations were you looking for?
MR. FRANK: Objection.
A. Again, I'd like to look at my Complaint, where I explain what allegations and what economic evidence I considered for purposes of that opinion.
MR. GOLDFARB: Objection.
MR. FRANK: You're referring to your report?
THE WITNESS: My report. I'm sorry.
BY MR. MARKOVITS:
Q. As you sit here today, after writing the report and reviewing the reports since September 1st, can you give me any understanding of what Complaint-related allegations you were considering in determining whether there was price impact on November 20th, 2007?

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A. Yes, I can, if I have my report in front of me. Because I would prefer not to speak from memory when talking about legal language from the Complaint that my report addressed. I think it's only fair that I get a chance to see that.

Q. And I will give you that chance, Doctor. But before we go there, I would like to know if you have any memory or understanding of what Complaint-related allegations you were considering when determining whether there was price impact on November 20th, 2007?

MR. FRANK: Objection.

A. Well, again, with the caveat -- I understand it's my job to answer your questions to the best of my ability -- but with the caveat I don't have my report in front of me, I believe I looked at the disclosures on November 20th, by the company, including but not limited to, the press release, the information statements, subsequent analyst call, various press reports, analyst commentary.

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And I examined all that information from an economic perspective as to whether that information amounted to what Plaintiffs characterize in the Third Amended Complaint as corrective disclosures.

Q. Again, what were the subject matters of the misrepresentations or omissions, to your understanding, that Plaintiffs are alleging were disclosed or materialized on November 20th?

MR. FRANK: Objection.

A. Again, my recall -- and I'd much rather have my report in front of me where the relevant section of the Complaint is quoted -- there were allegations about exposure to subprime risk, which had not been allegedly disclosed. There were allegations about lack of adequate capital.

THE REPORTER: "...of very good capital," is that what you said?

THE WITNESS: Lack of adequate capital; something about underwriting standards. Those are the issues that I sort of recall.

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BY MR. MARKOVITS:

Q. Let's turn to your report, which we will mark as Exhibit 187. Thanks to Mr. Frank.

(Exhibit 187, Expert Report of Mukesh Bajaj, Ph.D., marked for identification.)

THE REPORTER: Exhibit 187.

Q. Dr. Bajaj, the court reporter has handed you Exhibit 187. Is that the report you most recently wrote in this case?

A. Yes.

Q. Is that your signature on page 81 of the report?

A. Yes.

Q. Did you review a copy of Exhibit 187 before you signed it?

A. Yes.

Q. And in reviewing it, did you endeavor to make sure everything in Exhibit 187 was true and accurate?

A. Yes.

Q. Every word in the report you have either written or you've reviewed and accepted; correct?

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A. Yes.

Q. Did you have the ability to perform all the analysis that were necessary to form your opinions given in the report?

A. Yes.

Q. Is there any analysis that you were prevented from conducting that you feel would have been helpful in generating your opinions given in your report?

A. Can you repeat the question, please?

Q. Is there any analysis that you were prevented from conducting that you feel would have been helpful in generating your opinions reflected in your report?

A. No.

Q. Is there any further work you intend to do with respect to obtaining documents to support the opinions you have given?

MR. GOLDFARB: Can you read back -- can you read back the question, please?

MR. MARKOVITS: I can't, but I

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assume the court reporter can.
MR. GOLDFARB: Please.
THE REPORTER: "Is there any further work you intend to do with respect to obtaining documents to support the opinions you have given?"
THE WITNESS: So, as I say in paragraph 8, "If additional information becomes available, I reserve the right to supplement or modify opinions set forth in this report."
BY MR. MARKOVITS:
Q. As you sit here today, is there any other documentary information that you intend to pursue to support the opinions in your report?
A. Not at the current time.
Q. Are there any further opinions you intend to give in this case?
MR. FRANK: Objection.
A. The opinions I offer are in response to questions posed of me, and I try to answer them to the best of my ability. And those questions today or on a future date

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may or may not elicit other opinions.
Q. As you sit here today, have any other questions been asked of you that would solicit further opinions in this case?
A. No, not as I sit here right now.
Q. Is there any analysis that you performed, other than that as reflected in your report?
A. For this case?
Q. Yes.
A. No.
Q. Statements made in the report are true and accurate?
A. To the best of my information and belief, yes.
Q. When was the last time you reviewed the report?
A. Yesterday.
Q. There's nothing in the report that you would consider to be a mistake?
A. Not that I'm aware of, as I sit here right now.
Q. Did counsel provide you with any facts or data that you considered in forming

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the opinions to be expressed?
A. I'm sorry. Can you repeat the question?
Q. Did counsel provide you with any facts or data that you considered in forming the opinions you expressed?
A. Yes.
Q. What facts or data were provided to you by counsel?
A. So, for example, counsel provided me with Dr. Feinstein's affidavit, his report, some of the printouts of tests that he conducted after submitting his report, some of the data he produced, and various other information listed in Appendix 2 of my report -- some of which I gathered on my own, but some of it was provided by counsel.
Q. Turning to Appendix 2, would you be able to indicate which were provided by counsel?
MR. FRANK: Objection.
Q. Generally?
MR. FRANK: Objection.
A. So I'm not sure I can be

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comprehensive and have perfect recall; but, generally speaking, the documents considered under the title of "Legal Documents" were sent to me by counsel. Declarations, expert reports, and testimony, which cover various declarations and reports and transcripts of testimony by your expert Dr. Hallman and your new expert, Dr. Feinstein, were provided to me by counsel.
For the most part, academic sources, of which I've listed 42, were gathered by my team.
Q. Were any of the academic sources provided by counsel?
A. I can't think of any, as I sit here, unless it was a source that would have been cited by one of your experts and was part of discovery materials in that connection. I don't have a recall of that. But mostly these are materials that I'm familiar with, routinely rely upon, and I gathered myself.
For analyst reports, there again, I don't recall. Because sometimes we get

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some reports from counsel through -- through counsel from clients, so we don't have to spend money getting them from data vendors. But we always get any additional reports, if we need them, through our own data vendor subscriptions.

There may be some materials under the title of "Other Cases," where we receive those materials from counsel. Items under "News Articles" are items we collected. And that also pertains to items listed under Freddie Mac and miscellaneous sources and data sources.

Q. Did counsel provide you with any assumptions that you relied upon in forming the opinions you expressed?

A. Nothing comes to mind.

Q. You're not opining the Defendants did not engage in fraud, are you?

A. In reviewing the market efficiency evidence, I was agnostic with regard to Plaintiff's allegations. They did not matter for my analysis one way or another.

For evidence -- economic evidence

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on price impact, I obviously considered Plaintiff's allegations in the Third Amended Complaint, and then examined contemporaneous economic evidence to express the opinions that I did.

Q. For price impact though, you're not opining that the Defendants did not engage in fraud; correct?

A. No, the scope of my analysis is simply looking at Plaintiff's allegations as expressed in the Third Amended Complaint and examining contemporaneous public, economic record to reach the opinions that I have expressed in this report.

Q. And let me just, perhaps, clarify the question a little. Because you'd agree that one way that you could give an opinion that there's no price impact is by opining that there's no -- there was no fraud; correct?

A. Okay. I'm following you.

Q. All right. I just want to make sure. That's not what you're doing in your report; correct?

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MR. GOLDFARB: Objection.

A. If your question is whether I have reached an opinion on the truth or lack thereof of Plaintiff's allegations of fraud, I did not do any such work.

Q. Okay. That was my question. Thank you.

What is the efficient capital markets hypothesis?

A. So, generally speaking, economists think of efficient market hypothesis as a nested proposition. There is weak form of this hypothesis.

THE REPORTER: "Weak"?

A. Weak, w-e-a-k. The weak form of efficient market hypothesis says that price of a security in a well-developed market already reflects its historical values. So if you are charting a stock and you say, Well, looks like the stock has dropped below the range it has been traded in the last 50 days, that observation has no ability to predict whether, in the future, the stock will go up or it will go down.

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The current price already reflects the historical prices and their patterns. So that's the weak form of efficient market hypothesis.

What is more relevant, according to my understanding to questions of reliance, is the semi-strong form of market efficiency, which says that all public information is already reflected in the current stock price.

So, for example, if you have an oil company stock and you read an article which says that global oil consumption is going to go up by about 3 percent a year for the next 20 years and current capacity may not be sufficient to service demand in 10 years, that information, if it is already public, is not a sound basis for you to predict whether a particular oil company stock is going to go up or down from where it is today.

The semi-strong form of market efficiency is a statement that is tested in economics literature by conducting event studies, namely, does the stock price move

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reasonably promptly to material new information that is valued relevant. And in this context, sometimes a term is used called "informational efficiency," as against another term called "fundamental efficiency."

And it's my understanding that the standard of market efficiency that is applicable to exploring questions of reliance has always been, since the Basic case, semi-strong form of market efficiency in the informational efficiency sense. In other words, it's not about whether the stock price is correct from a fundamental point of view, it is whether it correctly reacts to material valued relevant information.

And then there is a benchmark, which is just a theoretical benchmark, called strong form of market efficiency, which nobody believes has any practical significance. But it's just a theoretical benchmark, which would say stock price today reflects all public as well as all nonpublic or private information.

Q. Is there a dispute among

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economists regarding the truth of the efficient capital markets hypothesis?

MR. FRANK: Objection.

A. So economists always are learning from empirical evidence. And by now, there is sufficient evidence that stock prices are not always correctly priced in the fundamental sense. We could have bubbles, which we often detect with hindsight, or other phenomena where economists conclude that prices were either too high or too low relative to economic fundamentals, at least with the benefit of hindsight.

There is also increasing evidence that, while there are several market institutions and characteristics that facilitate stocks on well-developed markets to generally trade in a semi-strong form of market efficiency in the sense of informational efficiency, there are times and circumstances when that may not be the case. So that's what I believe is the current consensus view among financial economists.

Q. And that was helpful, but it

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wasn't an answer to my question, which -- would it be fair to say that there's a dispute among economists as to the efficient capital markets hypothesis?

MR. FRANK: Objection.

A. Yes. So the latter evidence, obviously, is evidence of -- call it dispute, call it disagreement, call it a process of discovery. I don't think there is a dispute among financial economists that, generally speaking, stocks tend to trade in semi-strong form efficient market on well-developed markets. But there can be disputes, in the process of discovery, whether a particular observed evidence of deviation from semi-strong form of market efficiency is a statistical artifact or true economic phenomena, how prevalent it is or not. Those are the kind of, quote/unquote, "disputes" or "disagreements" or "discussions" that take place.

Q. And for purposes of your opinion, would it be correct to say that an efficient market is one where the market price for a

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stock rapidly reflects all public material information throughout the class period?

A. In the informational efficiency sense, yes.

Q. There's no consensus among economists how rapidly information has to be incorporated under the efficient capital markets hypothesis; correct?

A. Not really. I think -- my sense is that, for most purposes, economists believe that for actively traded stocks, information generally gets impounded -- new infor- -- new material information generally gets impounded within one trading day. It could be within a matter of seconds or not; and for certain kind of information, it may take more than a day. So I think it's more an issue of fact and circumstances, rather than a disagreement among economists.

Q. In your earlier report and testimony regarding Dr. Hallman's opinions, you said that a market that reacts to news on two out of six days is not an efficient one; correct?

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A. Yes. Again, understanding that when we talk about efficient market for the rest of the day, my maintained assumption is that you're talking about semi-strong form of market efficiency and informational efficiency. And unless I make it clear otherwise, I'm not talking about fundamental efficiency, and I'm not talking about anything other than semi-strong form of market efficiency.

Q. Fair enough. We'll take that assumption going forward, unless either you or I indicate otherwise. All right?

A. Perfect.

Q. All right. So with that understanding, are you assuming -- when you say that a market that reacts to news two out of six days is not an efficient one, are you assuming that there has to be a statistically significant reaction to news days in an efficient market?

MR. FRANK: Objection.

A. No.

Q. So you'd agree that a stock can

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react to news and react properly under a semi-strong form of efficient market and that reaction might not be statistically significant?

A. Well, when we say the stock reacts to news, the only way to make that statement is when the reaction is measured with sufficient degree of statistical reliability, because we measure these reactions, or lack thereof, through statistical models. So an economist cannot say that the stock price reacted to a certain piece of information unless that reaction is capable of being reliably measured, which requires a certain degree of statistical certitude because the tools of measurement are statistical in nature.

Q. Let's take Dr. Hallman's report as an example. Why would you expect there to be a statistically significant reaction on more than two of six news days?

A. Well, if Dr. Hallman puts forth six material news days and, hence, as candidates for examining market efficiency

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through cause-and-effect analysis, then it follows that if he chose the right dates, on those dates, he had a hypothesis that there was material news, he had a hypothesis as to the implication for the direction in which stock price should be expected to react to that news.

And the test part, then, has to do with whether or not, as required by the definition of market efficiency and reliance, on all, or almost all of those occasions, he does, indeed, observe an effect associated with the cause that he identified, and two out of six just does not cut it.

Q. And so I want to be careful how -- how we talk about this. Because some of the statements in your prior report and current report talk about news and then some talk about material news. And I want to make sure that we don't gloss over that distinction.

So when you say that a market that reacts to news on two out of six days is not an efficient one, you really mean a market that reacts to material news on two out of

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six days is not an efficient one; correct?

A. Well, I don't think I said what you just stated I said.

Q. All right.

A. I think I could read my answer, but what I said is: If Dr. Hallman puts forth six dates that are candidate for cause-and-effect tests, and if they are proper candidates, then, if he demonstrates cause and effect through statistically significant price movement in the anticipated direction, that evidence would be consistent with market being semi-strong form efficient in the informational sense; and if it did only on two of the six such dates, then that evidence is insufficient to further the belief that the market is semi-strong form efficient. That's not consistent with the maintained hypothesis that the market is semi-strong form efficient.

Q. Is it your opinion that every piece of material news about a stock should be expected to move the stock price in a statistically significant manner?

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MR. GOLDFARB: Objection.
A. I think because -- sorry -- I think because statistics are involved, I won't go as far as to say in every instance, but in almost every instance. But what I mean by that is, if you test a hundred dates for cause and effect, then large enough of those hundred dates satisfy what you would expect under cause and effect for statistically -- for the statistical inference that the market reacts to material news always.
So depending on the sample size, if you demonstrate cause and effect on 80 or 90 percent of the dates, that would be sufficient in my view. There's always some form of statistical noise, so the test is if it's statistically close enough to be a hundred percent of the time. And close enough depends on the sample size.
Q. So are you defining "material news" then, as news that moves a stock price in a statistically significant manner?
A. No. I think you are saying it

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backwards. For a test to be scientific, an economist has to identify material news before peeking ahead and saying, "Yeah, the stock moves on that date; therefore, the news must be material." That would turn the statistical testing on its head and that would be no honest evidence. That would be dishonest evidence.
Q. Right. But my question is: You're saying that any news that an economist identifies as material, before they do their testing, that with some minor adjustments -- 10 or 20 percent, I guess, under your prior testimony -- you would expect all of that material news to result in a statistically significant price reaction?
MR. FRANK: Objection.
A. No, that's not the right way to think about it.
Q. Well, tell me how --
A. All --
Q. -- to think about it.
A. All material value relevant news would be, or should be, associated with a

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stock-price effect. So if you've got a publicly traded company with market capitalization of a billion dollars and one of their trucks is destroyed in an evidence (sic) and there's a loss of a hundred thousand dollars, that would not be material value relevant news, that would be too small of a change to be picked up through an event study analysis. Event study is not designed for those purposes. I understand in legal context there are ways of talking about materiality that are not quantitative.
Q. And that's the distinction I want to make. But first, let me get to -- you keep adding on layers of qualifications, and I want to just make sure I understand it.
So you're saying now all material value relevant news should be accompanied by a stock-price effect --
MR. FRANK: Objection.
Q. -- correct?
A. Yes.
Q. And when you say "a stock-price effect" in that situation, you're saying all

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material value relevant news should be associated with a statistically significant stock-price effect?
MR. FRANK: Objection.
A. Yes.
Q. Okay. So you're discounting the possibility that there could be material value relevant news that would not have a statistically significant stock-price effect?
MR. FRANK: Objection.
A. I'm sorry. I didn't understand your question.
Q. So, in your opinion, there should be no material value relevant news that would cause a stock-price reaction less than a statistically significant one?
A. Well, there, as I said, if you observe that often enough, then you would say you have not established, empirically, cause and effect. There's -- we talked about, depending on the sample size, 80 to 90 percent threshold. So if you had six candidates for cause and effect and you demonstrated cause and effect on two out of

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those six, that would not be sufficient to demonstrate cause and effect.

Q. What if Dr. Hallman's two candidates were the two dates where there was a statistically significant price reaction, would that be enough to establish market efficiency?

MR. FRANK: Objection.

A. Can you repeat your question?

Q. What if Dr. Hallman's two candidates were the two dates that did result in a statistically significant price reaction, would that be sufficient to establish market efficiency in your opinion?

MR. FRANK: Objection.

MR. GOLDFARB: Objection.

A. Are you asking me a counterfactual hypothetical? Because I believe he offered six candidates.

Q. Yes. No, I'm asking a counterfactual hypothetical. What if there were only two candidates, he chooses the two candidates and both of those candidates have a statistically significant price reaction,

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would that be sufficient to establish market efficiency, in your opinion?

MR. FRANK: Objection.

A. So to give further clarification that that price reaction would have to be in the anticipated direction, have to be reasonably quickly enough, it would not, even then, be sufficient to establish semi-strong form of market efficiency over a 330-day class period. At most, it would say that there are reasons to believe that the two event dates he tested, on those dates the stock exhibited cause and effect. To generalize it to a 330-day class period would not be sufficient.

Q. Would it be sufficient for a 300-day class period?

A. Again, it's a fact-and-circumstances issue as to what is an adequate sample size, and I think 300, as long as those 300 dates are spread along the class period, which they would more or less have to, I would say yes.

Q. No. I'm saying suppose you had

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only two cause-and-effect analysis dates but instead of 330-day class period, you had a 300-day class period?

A. Oh, I see. I would say no, that would not be sufficient.

Q. How about a 30-day class period?

A. Probably, if that was a comprehensive examination of material value relevant news received over that 30-day class period.

Q. But I thought you just said a little bit ago that the only thing you could judge from two days was that there was a cause and effect on those two days. Now you're saying you can extrapolate to 30 days?

MR. GOLDFARB: Objection.

MR. FRANK: Objection.

A. Well, if -- again, depending on facts and circumstances, extrapolating from two days to a 30-day class period seems much more reasonable, generally speaking, than extrapolating from two days to a 330-day class period; and, of course, if one could, one should look at supplemental evidence.

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Maybe you had only two candidates to test cause and effect because the class period was short, then I would consider if the stock had publicly traded options doing a put-call parity test, which, in principle, can be done for every second of every trading day.

Q. Where in the economic literature would I find any threshold for the number of event dates that need to be tested out of a class period in order to find an efficient market for that class period?

MR. GOLDFARB: Kindly repeat the question. I'm sorry, Bill.

BY MR. MARKOVITS:

Q. Sure. Where in the economic literature would I find any indication of how many event dates need to be tested to be able to extrapolate market efficiency for a given class period?

A. Well, I don't know that there is a bright line rule, but I have pointed to several articles written in the context of examination of reliance, which say a handful of dates in a long class period is not

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sufficient. I think --

Q. Are you talking about articles or cases?

A. So, as I was saying, there are articles to that effect which are cited, and I believe there are cases that have also talked about this issue. For example, I recall in the Poly medical case, the Court said, if I recall correctly, there may have been five or six dates in a class period of a few hundred dates. That's obviously not enough.

It is a little bit of a fact-and-circumstance issue. In this particular case, for example, there was a structural break. So one would want to make sure there are enough dates both before and after the structural date, break date or dates. So it's a little bit of a fact-and-circumstances issue.

But two event dates for a 330-day class period, I think there is no evidence that I'm aware of that would say it is sufficient. And I've cited several

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authorities to the contrary.

MR. FRANK: We've been going about an hour, can we take a break now or...

MR. MARKOVITS: Yeah. We can take a break in a half -- you mean we've gone on an hour since the last break?

MR. FRANK: Almost, yeah.

MR. MARKOVITS: My goodness. Time flies. Sure.

THE VIDEOGRAPHER: The time now is 11:02. Off the record.

(Recess taken at 11:02 a.m. to 11:15 a.m.)

THE VIDEOGRAPHER: The time now is 11:15. We're on the record.

BY MR. MARKOVITS:

Q. Dr. Bajaj, we were talking earlier about material news. In that context, how do you define "materiality"?

MR. FRANK: Objection.

A. What do you mean by "in that context"?

Q. Well, when you're talking about material news, what do you mean by "material news"?

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A. So if I'm talking about "material news," in order to test the cause-and-effect prong for market efficiency, then it would be news that would be expected to have a material or significant impact on the stock price.

Q. Would earnings announcements fall into that category?

A. Sometimes they do.

Q. So if you were going to choose earnings announcements as your events to study for an event study, how would you determine which earnings announcements are or are not proper candidates for the event study?

A. Well, I don't think that question can be fairly answered in the abstract, unless it's in the context of a case. Unless I've thought about facts and circumstances in that case.

THE REPORTER: You haven't thought?

A. Unless I've thought about facts and circumstances in that case.

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Q. Well, you've thought about it in this case, so let's take earnings announcements in this case that Mr. Hallman reviewed.

How would he have determined whether or not earnings announcements were proper candidates for an event study?

MR. FRANK: Objection.

MR. GOLDFARB: Objection.

A. I have not done the work that Mr. Hallman did. I have evaluated what he did. So I have not -- and I haven't looked at Mr. Hallman's report since January of 2013 either.

Q. As a matter of methodology, how would you determine whether the earnings announcements dates in this case were appropriate candidates for an event study?

A. Well, he claimed that he --

Q. No. No. Sorry, Doctor. Not what he claimed.

How would you determine -- you said that sometimes earnings announcement dates that have material news are proper

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candidates; sometimes they're not.

How would you, in this case, determine whether the earnings announcements are proper candidates for an event study?

MR. FRANK: Bill, please don't interrupt the witness.

You can answer.

MR. MARKOVITS: I'll try to refrain as long as he answers my question.

A. I don't have those earnings announcement dates in front of me. I don't have in front of me what the announcements were and under what circumstances they were made. And without that information, I can't tell you what I will do. And I never was tasked with affirmatively determining whether a particular earnings announcement date was material or not. I was asked to simply examine the conclusions of Mr. Hallman's report.

Q. So you can't tell me what methodology an economist would use to determine whether earning announcements in

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any given case are proper candidates for an event study. Is that your testimony?

MR. GOLDFARB: Objection.

A. That's not my testimony. I have always -- I have already told you that any candidate date for a cause-and-effect test must be such that ex-ante -- before you look at the results, before you look at the price reaction -- you have an economic hypothesis that this event is economically material to the company; and, hence, expected to have a price reaction that is statistically significant and whether that reaction is in the positive direction or negative direction. That's the extent to which I can articulate the methodology, in general, without considering specific facts and circumstances.

Q. And without considering specific facts or circumstances, let's take earnings announcements, under your hypothesis or your methodology, you need to form a hypothesis of whether an earnings announcement dates is material in the sense that it would expect to have a statistically significant reaction, do

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you look at that earnings announcement first and examine what came out on that earnings announcement before you determine whether it's a proper candidate?

MR. FRANK: Objection.

A. I don't understand your question. Can you read it back, please?

Q. Do you look at the earnings announcement -- its context, whether it was a surprise, whether it was expected -- before you determine whether to use it as a candidate in your event study?

MR. GOLDFARB: Objection.

A. You look at all those things in order to determine whether it is a candidate for a cause-and-effect test.

Q. So in this case, it would have been appropriate for either Mr. Hallman or Professor Feinstein to look at the six earnings events dates and determine: Well, I can't use four of them because the earnings were as expected, so I'm going to use two of them because they were earnings surprise; and in those two, there's a statistically

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significant reaction. That would be a proper event study?

MR. FRANK: Objection.

A. Under your hypothetical, if they had examined six earnings announcements and, in a principal manner, as you said, determined two of those were candidates for a cause-and-effect test and then gone ahead and tested those two, that would be relevant evidence without saying whether those two cause-and-effect dates by themselves would be sufficient to conclude that the stock traded in a semi-strong form efficient market throughout the 330-day class period.

Q. Where might I find support in the economic literature for the proposition that in a semi-strong form of efficient market every piece of material news would be expected to move the stock price in a statistically significant manner?

A. I think it is almost so set in the definition of semi-strong form market efficiency, in the economic literature as I have cited, it so says in several other

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publications that I have cited.

Q. Can you point me to one such publication that supports the proposition that in a semi-strong form of efficient market, material news would be expected to move the stock price, in a statistically significant manner, on every occasion?

A. I can review my report and point to a few instances.

Q. Please do.

A. Okay. So on page 25 of my report, Footnote 62 points to one of my studies, which has further references; Footnote 65 points to Ferrillo, Dunbar and Tabak that Dr. Feinstein cited. It also -- there's also Footnote 66, which is another writing by David Tabak that I believe was cited by Dr. Feinstein and...

Q. And I just want to clarify, your position is that these articles support the proposition that in a semi-strong form efficient market, every piece of material news would be expected to move the stock price in a statistically significant manner?

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MR. GOLDFARB: Objection.

A. With the caveat that we discussed already, yes, these and other authorities, including the Quasar decision and various other authorities I have cited in my report.

Q. If news is expected, there might not be a statistically significant price reaction; correct?

A. Well, if it's affected -- expected, then it's not news. News is, by definition, new information.

Q. So if the market is expecting -- let's take this case. If the market is expecting that there's going to be a $3.29 earning per share loss and the news comes out on November 20th, 2007, there's a $3.29 earning per share loss, that's still news; correct?

A. I stand corrected. I was talking about stale information versus news. That's what I was focused on, rather than expected or unexpected. So it could be news but not unexpected news, and it's only unexpected news that would be expected to elicit a price

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reaction.

Q. So that's another qualification, unexpected news would be expected to elicit a stock-price reaction; correct?

MR. FRANK: Objection.

A. In a semi-strong form efficient market, yes.

Q. And if news is unexpected and material but there are confounding factors, there might not be a statistically significantly stock-price reaction; correct?

A. Well, it depends on facts and circumstances. And I don't think you can make a statement as general as you made it.

Q. Why can't I make a general statement that would be correct, that you could have news that's unexpected and material and, yet, have equally offsetting confounding factors or confounding news?

MR. FRANK: Objection.

Q. And thereby, have no statistically significant price reaction. Wouldn't that be correct?

MR. FRANK: Objection.

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A. Well, this latter statement gets closer to being correct if you added more structure to it. If the confounding news is in the opposite direction and simultaneously received, then you may not see a statistically significant price reaction. Sometimes news is released on the same day, but at different points in time. And economists routinely look at and try to stock prices and things of that nature. So that's why I was saying that your previous statement was a bit too general.

Q. Would you agree that there can be news that is both material, unexpected, and value relevant that does not result in a statistically significant stock-price reaction?

A. Can you repeat the question?

Q. Would you agree that there could be news that is material, unexpected, and value relevant that does not result in a statistically significant stock-price reaction?

A. Well, that could be the case if

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the market is not semi-strong form efficient. That could be the case every once in a while, going back to the earlier comment of 80 to 90 percent of the time, once you observe a stock-price reaction. So it's possible sometime, but that shouldn't be the case on which you can conclude that the market is semi-strong form efficient.

Q. You're familiar with the article by Brav and Heaton titled, "Event Studies and Securities Litigation Low Power Confounding Effects and Bias"?

A. Yes.

Q. Cited in your report?

A. If you say so, it's cited, it is.

Q. Do you recall the example -- one of the examples they give, where there's an unexpected disclosure of a $700-million fraud that results in accompanying stock decline in a company with a $42-billion capitalization? Do you recall that example?

A. No, I don't recall it.

Q. Well, let me set out the facts for you generally.

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You've got a company, $42-billion capitalization. They announce a $700-million fraud. The stock reacts in the appropriate direction and in the appropriate amount that you would expect in a semi-strong form of efficient market, but there's no statistically significant price reaction because $700 million in the context of a $42-billion company would not provoke a statistically significant price reaction. Let's take that example.

Would it be your opinion that a $700-million fraud is not material news under that example?

MR. FRANK: Objection.

A. I would say that's an incomplete hypothetical. Because, generally, when a company announces fraud, the stock-price impact reflects more than the direct dollar-for-dollar loss to that fraud and anticipates all the collateral consequences, including lawsuits by firms like yours, the loss of reputation and other things.

But if you limit out all of those,

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by assumption, and you say that the standard error, the normal random volatility in the stock was so high that 700 million divided by 42 billion, which would be the measure of direct-dollar impact of the fraud in your example, would not be statistically significant, then yes, of course. In a semi-strong form efficient market, it would not be statistically significant and that would be a reason not to pick that event as a candidate for testing cause-and-effect relationship. The low power that they're talking about is essentially that when dollar-and-cents impact is small relative to the company's market capitalization, then event study is not the tool that would statistically significantly pick up that event.

Q. Right. And I understand that, but that wasn't my question again.

My question was: Is it your opinion that, in that hypothetical, the announcement of a $700-million fraud that was not expected is not material news?

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MR. GOLDFARB: Objection.

A. Under all your assumptions and with all the caveats I mentioned, in that counterfactual hypothetical, it would not be quantitatively material news.

Q. And you say "quantitatively material." You're providing the testimony as an economist; correct?

MR. FRANK: Objection.

A. I don't know what the connotation is about an economist and quantitative materiality, but I'm talking about quantitative materiality that is measured through stock-price impact.

Q. So any time we talk about material news, you're talking about quantitative materiality?

MR. FRANK: Objection.

A. In the context of testing cause and effect, obviously, yes.

Q. Would you agree with me that that type of fraud, a $700-million fraud, would be viewed by a reasonable investor as having significantly altered the total mix of

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information available?

MR. FRANK: Objection.

A. I think you're asking me a legal question not an economic question. I understand there is a notion of qualitative materiality. And we talked about whether or not a, quote/unquote, "fraud" has implications over and above the dollars and cents involved as a direct cost of that fraud.

But, of course, if we were dealing with allegations that Freddie Mac lost $10,000 due to some fraud, then that allegation might be legally actionable. But an event study would not be the tool to use, either to evaluate market efficiency for reliance purposes, or to use, at later stage, for any kind of damage purposes.

Q. So in choosing a candidate events for an event study, you have to look at the facts and circumstances; correct?

A. Yes.

Q. Okay. And that requires some level of subjectivity; correct?

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MR. FRANK: Objection.

A. Well, it requires some level of well-informed and consistence with economic science-based subjectivity.

Q. And we've talked about and agreed upon that when you talk about an efficient market, you're talking about the semi-strong form of efficiency; correct?

A. And informational efficiency, yes.

Q. And it's your understanding that a semi-strong form of a market efficiency is what's required in order to obtain the presumption of reliance under Basic?

A. Yes.

Q. Where did you get that understanding?

A. As I explained in my report, it's directly from the language in Basic, lots of commentary on Basic over the years, economic literature, the various authorities I have cited in my report, and my experience both teaching and consulting for the last 20, 25 years.

Q. Would you agree that for the

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purposes of applying the Basic presumption, an efficient market is one where market professionals generally consider most publicly announced material statements about companies, thereby affecting stock market prices?

MR. FRANK: I'm sorry, Bill, you just got a little fast for me.

Q. Okay. Would you agree that for the purposes of applying the Basic presumption, an efficient market is one where market professionals generally consider most publicly announced material statements about companies, thereby affecting stock market prices?

A. Again, that was a mouthful, but what I understood you to be saying, fairly describes the process that makes market semi-strong form efficient. People consider information. They take action on the basis of that information. And those actions result in that information being impounded in security prices and they become semi-strong form efficient.

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Q. So do you agree with the statement I made?

A. Yes, that's a statement of process. I don't know what you mean by "agree." In what context? For what purpose? That's why I qualified.

Q. You'd agree that public information generally affects stock prices?

MR. FRANK: Objection.

A. When the market is efficient, that is a fair, general statement.

Q. You'd agree that efficiency is not a binary yes-or-no question; correct?

MR. GOLDFARB: Objection.

A. Again, when you ask me to give yes-or-no answer to some verbiage you're picking up from some legal decision or some technical treaties, I think you have to be careful what that yes or no means.

So maybe, you can explain the context in which you want me to say yes or no and repeat your proposition.

Q. In your opinion, in determining market efficiency in the context of this

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case, do you view efficiency as a binary question?

A. No, because market could be efficient with regards to one type of information and maybe not another. And in that context is how I understand the language that you're reading to me, that it's not a binary question.

Q. Would you agree that it's a matter of degree?

MR. FRANK: Objection.

A. I -- it's obviously a matter of degree. We discussed weak form of market efficiency, semi-strong form of market efficiency, strong form of market efficiency. Those are matters of degree.

Q. Is the proposition that market prices respond promptly to material information about a stock true in a semi-strong form efficient market?

A. I'm sorry. There was some background noise, so I couldn't hear.

Q. Is the proposition that market prices respond relatively promptly to

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material information about a stock true in a semi-strong form efficient market?

MR. GOLDFARB: Objection.

A. Yeah. As a general proposition, yes.

Q. Does the proposition that market prices respond relatively promptly to material information depend upon proof of a semi-strong form efficient market?

MR. FRANK: Objection.

A. Can you read your question again?

Q. Does the proposition that market prices respond relatively promptly to material information depend upon proof of a semi-strong form efficient market?

MR. FRANK: Objection.

A. So the proposition that you read is the definition of semi-strong form efficient market, as well as a description of it. And if one were required to prove that for a certain period, a certain security traded in a semi-strong form efficient market, then one would need to prove that proposition through cause-and-effect

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analysis.

Q. Can't market prices respond relatively promptly to material information in the absence of a semi-strong form efficient market?

A. Maybe yes, maybe no. They cannot be presumed to have impounded that information into prices if the market is not semi-strong form efficient.

Q. You would agree with me that a company's stock price can become inflated, because of something the company failed to disclose at a particular point in time, an omission?

MR. VOLPE: Objection.

A. Are you asking me a hypothetical that says under some circumstances that can happen, or do you care to more --

Q. No, I'm just asking you --

A. -- carefully define --

Q. -- as a general proposition, a company's stock price can become inflated because of something the company failed to disclose at a particular time, in other

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words, omission?

MR. FRANK: Objection.

A. Well, under certain circumstances, if there is an omission and it is material and the market cannot infer partially corrective information through independent research or announcements by other issuers and the market is semi-strong form efficient, then yes, it's possible for an omission to result in stock-price inflation.

THE WITNESS: Do you mind if I take one minute to fill my water cup?

MR. MARKOVITS: No, that's fine.

THE WITNESS: Thank you.

THE VIDEOGRAPHER: The time now is 11:50 We're off the record.

(Recess taken at 11:50 a.m. to 11:51 a.m.)

THE VIDEOGRAPHER: The time now is 11:51. We're on the record.

BY MR. MARKOVITS:

Q. From an economist's perspective, Dr. Bajaj, there's no fundamental difference between telling a lie that causes inflation and admitting to make a statement that causes

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inflation; correct?
A. I think that is way too general a statement for me to agree or disagree with.
Q. You can't agree or disagree with that statement?
A. Not in the most general form that you've stated it. I'm not fighting you on it. I'm happy to agree to a reasonably carefully worded statement.
Q. You would agree that you don't need a stock-price increase on the day a company makes a false statement in order for inflation to come into this company's stock price; correct?
MR. FRANK: Objection.
A. Again, you are, with all due respect, making statements that are way too general for me to just agree or disagree with. And I'd like you to, maybe, give me a more complete hypothetical.
Q. Have your views on these issues changed over time?
MR. GOLDFARB: Objection.
A. Well, I always try to learn over

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time, but nothing in this connection that you're asking me about is the type of subject matter on which my views have significantly evolved in the last many years.
Q. Do you recall being asked, in the Jaffe matter, a question: "You'll disagree with me, won't you, Dr. Bajaj, that you don't need a stock-price increase on the day a company makes a false statement in order for inflation to come into that company's stock price?"
And you answered, "Yes, I do."
Do you recall that?
A. Well, I don't recall that exact question and the answer, and I have no quarrel with, under appropriate circumstances, agreeing, in the context of that case, that the answer would be what it was.
Q. In that hypothetical question, the context of the case, was that question differed (sic) in the Jaffe case than the question I just asked you two minutes ago?
MR. FRANK: Objection.

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A. Again, Counsel, I don't remember when that question was asked, what was asked before, what was asked later, what were the facts that -- or the context under which that question was asked. I absolutely agreed with that answer and I have no quarrel with that answer.
All I requested is, rather than reading a sentence without context from some testimony I might have given ten years ago, if you're going to ask me something useful about this case, try to ask me more --
Q. You don't think it's useful --
A. -- well-defined questions.
Q. All right. So it was well defined enough for you in the Jaffe case, but it's not well defined enough for you in this case?
MR. FRANK: Objection, argumentative.
MR. GOLDFARB: Objection.
MR. FRANK: Why don't you pose a --
MR. MARKOVITS: All right.
MR. FRANK: -- an appropriate

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question.
BY MR. MARKOVITS:
Q. So this was a general question. What more context do you need to answer the question whether a stock-price increase on the day a company makes a false statement can cause inflation to come into the stock's price? What factual context does the answer to that question depend on?
MR. FRANK: Objection, compound and argumentative.
A. So there could be a false statement that is an affirmative misrepresentation. That could result in stock price going up, and thereby becoming inflated, assuming that the statement was quantitatively material, that the mix of information was such that investors did not have alternative ways to expect the content of that statement at issue.
On the other hand, it could be a circumstance where there is an omission. A company has one factory; that's its major asset; its factory burns down; the company

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has a duty to disclose to the market that the factory has burned down; fails to do so. That omission, with some other qualifying assumptions as necessary, would generally be a reasonable -- it would be reasonable to say that omission may well have inflated the company's stock price.

I'm not quarreling with the general principles at all.

Q. Well, that's the only question I asked you, Dr. Bajaj, was the general principle.

You don't need a stock-price increase on the day a company makes a false statement in order for inflation to come into the company's stock price. The answer to that question is yes; correct?

MR. FRANK: Objection.

A. Counsel, with all due respect, you are -- it sounds like, maybe not intending to -- but you are badgering me a bit. And I think I'm trying to be respectful and answer your questions, and --

Q. We might have a little

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disagreement there, Dr. Bajaj. I don't think you're being respectful in trying to answer my questions but we'll press on. And let's hope that we can both get a little better at that as we go forward.

My question is: As a general proposition, the answer is yes, to the question you don't need a stock-price increase on the day a company makes a false statement in order for inflation to come into that stock price; correct?

MR. FRANK: Objection. This has not only been asked and answered, but I believe, Bill, you already have the answer you want. So I'd ask that you move on, given that you've already received an answer and, indeed, the answer that it appears that you want.

So I do think that, given that you've already gotten the answer that you want, this probably is getting very close to badgering the witness. So if you can, please, pose another question.

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MR. MARKOVITS: I'll move on.

MR. FRANK: Thank you.

MR. MARKOVITS: Because you're asking me.

MR. FRANK: Thank you.

BY MR. MARKOVITS:

Q. You'd agree with me that a company does not need to admit a committed fraud for inflation to come out of the stock price?

A. Under certain circumstances that could be true.

Q. Before lunch, let's get into one more area. Could you turn to your report at paragraph 16 under "Summary of Opinions." Under 16, Item Number 2), it states, "The economic evidence supports a finding that the alleged misrepresentations and omissions had no impact on the price of Freddie Mac's common stock."

Do you see that?

A. Yes.

Q. Is it your opinion that the misrepresentations and omissions alleged have no price impact on November 20th, 2007?

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A. No. My opinion is that when we look at the company's announcement on November 20th, 2007, and we consider the contemporaneous market evidence on how that announcement was perceived by the market, the price decline on that date does not line up with Plaintiff's allegations regarding alleged disclosure defects based on the analysis of public information that I described.

Q. But I want to be clear about what your opinion is. Are you saying, in your opinion, there is no price impact -- there was no price impact on November 20th, 2007, related to the allegations of Plaintiff's Complaint?

A. So related to in the sense that the new information that the company provided on that day and the market commentary interpreting that information, does not lead to a conclusion that the information on that day was corrective of previous disclosure defects alleged by the Plaintiffs.

Q. You would agree that there was a

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statistically significant stock-price reaction on November 20th, 2007; correct?

A. Yes.

Q. And adjusting for market and industry factors, that was roughly a 29 percent decline; is that correct?

A. If I recall correctly, the Complaint talked about 29 percent stock-price decline before adjustment; but, under these circumstances, market and industry adjustment usually does not make much of a difference. With that caveat, yes.

Q. And about how much of a percentage decline would there need -- would there have needed to be to reach statistical significance?

A. Again, I don't have the statistical information of what the standard effort was, but I do recall that the 29-odd percent stock-price decline on that date was statistically significant, very comfortably.

Q. As an economist, how would you go about proving that no part of that 29 percent decline was caused by any of the

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misrepresentations or omissions either being disclosed or the risk materializing on November 20th, 2007?

MR. FRANK: Objection.

A. So, again, at this stage of the case, what I was tasked to do was to examine the information that the company put out, take it at its face value, examine contemporaneous commentary by market participants, how they interpreted the information when they viewed it from their own informed perspective based on what information they knew outside of what the company put out, review contemporaneous commentary by analysts on that date and around that date.

And based on examination of that economic evidence, which is public, I concluded that the market evidence does not support that that price drop was corrective of disclosure defects that the Plaintiffs have alleged in their Complaint, whether you view them as simple corrective disclosures or you view them as materialization of

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previously undisclosed risk.

Q. And I want to explore your answer a little bit. You started off with, "At this stage of the case." Would your analysis of price impact vary at a later stage of the case or at a different stage of the case?

A. Well, it could. If I am provided information that goes beyond what is public information, that may or may not have an impact on that question. But right now, as I told you, my assignment was to look at the company's disclosures, consider the mix of public information, consider contemporaneous market interpretation of company's disclosures, and see whether, in market's view, the negative price reaction reflected correction of alleged disclosure defects.

Q. Is what you were asked to do a valuation analysis in economist's terms?

A. Well, using stock-price reaction as a tool for valuation, you could say that. But I did not go around building a valuation model of the company and then, in that context, said this information was disclosed

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on this day and it had X-dollar of an impact, and whether the X-dollar impact had some contribution from what the market learned that day that was corrective in nature; that's not what I did.

Q. And you say there may be other information that's not public information that you would incorporate into your analysis down the road. What were you talking about there?

A. Well, I don't know. I will look at all the information that is relevant when the discovery is complete. And I will consider all the evidence. And when I've considered all the evidence, I will keep an open mind to reanalyze this issue.

But at this point in time, my assignment was to look at public information on that day, disclosure on that day, and contemporaneous market commentary surrounding that day, in light of mix of information that was public going into that day. And that's what I did.

Q. But you'd agree that there may be

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nonpublic information that would affect your price impact analysis following discovery and you're open to looking at that?

MR. FRANK: Objection.

A. I'm always open to looking at all relevant evidence. My analysis here was, in part at least, responsive to Dr. Feinstein. And I didn't see him point to any evidence, other than the large price drop on that day, which was right there in the Complaint, and just repeating Plaintiffs say so, that it was a revelation of alleged fraud.

Q. Was it your understanding that Professor Feinstein was opining with regard to price impact?

A. Well, he was interpreting the market reaction on that day in a way that would have implications for inference on price impact.

Q. Did you analyze whether there was evidence that tied the stock-price decline on November 20th to the materialization of any of the risks that the Plaintiffs contend were the subject of misrepresentation and

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omissions during the class period?

A. Based on the public evidence that I have seen, there is no basis for me to say that any of the observed price reaction represented materialization of previously undisclosed risk, as Plaintiffs allege, rather than negative developments in the marketplace associated with disclosures and risks that the market already knew.

Q. What would you have to see from market participants to determine that there was a price impact or to provide evidence of a price impact?

MR. FRANK: Objection.

Q. Let me just ask one of those.

What would you have to see from market participants to determine that there was evidence of a price impact?

MR. FRANK: Objection.

A. You know, this is a hypothetical question you're posing of me. I can't sit here and think of all the things that I might have observed but did not observe that would have led me to reach a different conclusion.

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So, for example, if, on that date, there was some discussion by analysts, "Hey, it looks like Freddie Mac's loss is largely a result of larger exposure it has to subprime than they ever admitted." As a hypothetical, that would be, I think, a relevant fact to consider. That may or may not change the opinion on price impact, depending on the totality of disclosures on that date.

Q. You're aware from Professor Feinstein's Cammer analysis, that a number of analysts followed Freddie Mac; correct?

A. Yes. I'm aware of that, generally, not just through Dr. Feinstein's report.

Q. And those analysts would have had access to financial information that was put out by Freddie Mac; correct?

A. I think that's a reasonable inference.

Q. And would it also be a reasonable inference that they would have access to news about the housing market decline?

A. Yes.

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Q. And they would know of the problems faced by other institutions resulting from the housing decline; correct?

MR. FRANK: Objection.

A. One would hope so.

Q. Yeah. So, you know, for example, I would assume an analyst -- or would it be reasonable to infer that an analyst following Freddie Mac would be aware that Citigroup announced billions of losses in October of 2007 relating to the housing decline?

MR. VOLPE: Objection.

A. I don't know that from memory, but I'm happy to take your representation for it.

Q. And would it be fair to assume that analysts would be aware of billions in losses and write-down by Morgan Stanley and Bear Stearns in November of 2007?

A. Are you talking about before November 20th of 2007 or after November 20th?

Q. These are both before.

A. Okay. If you say so.

MR. FRANK: Objection. Sorry.

Q. And do you have any knowledge what

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the earnings consensus was among financial analysts prior to November 20th, 2007?

MR. FRANK: Objection.

A. Not from memory.

MR. FRANK: I'm sorry.

A. Not from memory. But I believe I have mentioned those facts in my report.

Q. And at least in the Third Amended Complaint, I'll represent that it's stated that there was an earnings consensus of a one-cent loss.

Does that sound like something that you also have in your report?

MR. FRANK: Objection.

A. I wouldn't be surprised if that was the case, but I don't recall.

Q. And do you recall, though, that on November 20th, 2007, the earning per share loss was actually $3.29?

A. It sounds familiar.

Q. That would qualify as an earnings surprise; correct?

A. Yes.

Q. A pretty significant earnings

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surprise in this case?

MR. FRANK: Objection.

A. Yes.

Q. What, in your view, was the cause of the 29 percent stock decline on November 20th, 2007? Cause or causes.

MR. VOLPE: I'm sorry. What was that last part?

MR. MARKOVITS: Cause or causes.

BY MR. MARKOVITS:

Q. What, in your view, was the cause or causes of the November 20th, 2007, stock decline for Freddie Mac?

MR. FRANK: Objection.

A. So I think I've discussed the evidence as to what the market participants contemporaneously thought, on or about page 29 of my report; and, also, on or about 875 of my report, and I can look at those pages and share with you the results of my research as to what contemporaneous market commentary attributed that price reaction to.

Q. Without reviewing your report in detail, do you have any memory or

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understanding of what your review found with regard to the primary reasons for the 29 percent stock decline?

A. So without my answer being necessarily complete and comprehensive, I believe a significant portion of the earnings miss was attributed to Freddie Mac requiring significant mark-to-market adjustments on its retained portfolio. Given the fact that liquidity was disappearing from mark to market at that time and most market backed securities, whether subprime or prime market-based securities, was subject to markdown over that period by Freddie Mac and other financial institutions.

There was a concern as to whether -- even if these mark-to-market losses turned out to be temporary, it would, in the meantime, limit Freddie Mac's participation in the mortgage market consistent with its mission to support liquidity in that market.

Without additional capital, there was some concern whether, in those market

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conditions, capital rates could be quickly accomplished and at what cost; and, of course, the market was learning, for Freddie Mac and other financial institutions that were exposed to U.S. mortgage market, both for subprime and prime mortgages, that default rates were going up. Losses were increasing, probability of a recession, which would lead to further deteriorated trends was increasing.

And these were the type of concerns that market participants expressed when explaining the stock-price drop on November 20th.

MR. FRANK: Bill, allow me to propose, at this time, that we take a lunch break. I have various strong arguments, if you're not in favor of such a break.

MR. MARKOVITS: No, you've convinced me.

THE VIDEOGRAPHER: The time now is 12:21 Off the record.

(Recess taken at 12:21 p.m. to 1:07 p.m.)

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THE VIDEOGRAPHER: The time now is 13:07. We are on the record.
BY MR. MARKOVITS:
Q. Dr. Bajaj, before the lunch break, you had listed various items that, in your view, may have contributed to the 29 percent stock decline.
Can you tell me which of the items that, in your view, may have contributed to that 29 percent stock decline were, in your view, unexpected?
Let me just give you, by way of example, you -- you -- one of the items you mentioned -- what brought that to mind is you talked about the housing decline, but the housing decline wouldn't have been unexpected on November 20th. The market knew about the housing decline at that point.
So which of the items that you discussed would have been, in your view, unexpected that it would have led to that abnormal return?
MR. FRANK: Objection.
A. So, you know, Counsel, actually

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it's very interesting --
Q. Yes.
A. -- it's very interesting that you feel housing decline would have been expected as of November 20th. There are some very, very, in my view -- I'm a quantitative guy -- breathtaking charts that show no matter how market expectations were coming down, the reality was always significantly worse over that period.
So if you have a chart which says, as of date one, there's an expectation of housing price declines that goes at a certain rate, by the time you get to day two, you're already below where the expected path would be on day two. And expectations evolve. And this continued to happen. And unfortunately, we know that even as of November 2007, housing declines were not in the ninth inning. They were probably in the first or the second inning.
So I think, not just for Freddie Mac, if you look at most big financial companies that were exposed to U.S. mortgage

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market, pretty much every quarter it was a surprise to the market how much worse the mortgage market fundamentals had become.
And Freddie Mac had what, $1 1/2 trillion balance sheet? So, like, $2 billion is a very large loss. In relation to the balance sheet, it's not all that surprising to me, in light of having looked at evidence during that period, that a further deterioration in market fundamentals in the housing market, the drying up of the liquidity, which was driving the lowering of marks, could add up to billions of dollars.
And I think if you look at the history of major financial institutions, starting with beginning of 2007 till end of 2008, I think those multibillion-dollar losses stopped being nonroutine and shocking.
So I think the underlying fundamentals were really about unexpectedly severe deterioration, and housing fundamentals compounded by the fleeing of liquidity from the marketplace, whereby, for mark-to-market accounting purposes, marks

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kept coming down more than would have increased nearly and dissipated even a month or two ago, leave aside a quarter ago.
So I think those were the biggest factors, in my view.
Q. The biggest unexpected factors?
A. Yes.
Q. Okay. Could you turn to your report at paragraph 67, please? And in that paragraph you talk about looking at the press relief -- release and the transcripts of the investor conference call on November 20th, 2007?
A. I apologize.
Q. Paragraph 67.
A. Sixty-seven. I heard 867.
Q. I'm sorry.
A. I'm sorry.
Q. Okay. And in paragraph 67 of your report, you talk about looking at the press release for economic evidence and the transcript of the investor conference call on November 20th, 2007.
*Do you see that?

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A. Yes.

Q. You don't mention the information statement that was released on that day, although earlier today I believe you did mention it.

Did you review that as well?

A. Yes.

Q. Okay. And then if you look at page 103 of 370, if you look at the top of the report and look at page 103 of 370.

MR. FRANK: I'm sorry. What are you referring to?

MR. MARKOVITS: Page 103 of 370 at the very top.

THE WITNESS: Okay. I have it.

BY MR. MARKOVITS:

Q. Okay. Which is part of the documents considered. And you have Freddie Mac sources and it doesn't list the information statement. Is that just an oversight?

A. Looks like it is, unless that information statement is part of some other document and that's why it didn't get

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separately picked up.

Q. But -- and -- regardless of whether there was an oversight, the bottom line is: You reviewed the information statement as part of your analysis with regard to price impact; correct?

A. I don't have a memory or a picture of information statement in my mind as I sit here today, but I know I reviewed all the information statements over this period.

Q. And I believe you earlier -- and you'll correct me if I'm wrong, I'm sure -- acknowledged that one of the allegations of the Plaintiff's Complaint relates to misrepresentations or omissions with regard to its exposure to credit risk; is that correct?

MR. FRANK: Objection.

A. I have listed, in paragraph 9 of my report, five items from the Third Amended Complaint. And, I guess, credit risk would be a component of several of these items.

Q. Particularly, item small (i); correct?

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A. Yeah, that was -- that would be related to credit risk.

Q. So let's just talk about it in terms of exposure to nontraditional mortgages. Can I use that as a summary of small (i) and we'll understand what we mean?

MR. FRANK: Objection.

A. Well, here I have used the term "nontraditional" coming from the Complaint. And I understand that your use of this term today means, as it says in that item, "risk of loss from subprime mortgage loans and other high-risk mortgages, including all three mortgages. Is that a fair understanding --

Q. That's fair.

A. -- of how you would use that term?

Q. Yes.

A. Okay.

Q. Just so I don't have to repeat that long phrase every time.

A. Okay.

Q. So with that terminology, is it your opinion that Freddie Mac accurately

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reported its exposure to credit risk from nontraditional loans?

MR. FRANK: Objection.

A. In connection with the analysis of what the market reacted to on November 20th, I did not see in the information that was released on that day by Freddie Mac, and as it was interpreted contemporaneously to include admissions that Freddie Mac's exposure to its subprime or Alt-A loans, or other kind of so-called nontraditional loans, was higher than, consistent with the range market would have anticipated in light of its various disclosures.

Q. Thank you, but that wasn't quite the answer to the question I asked, which is: You're not giving an opinion that Freddie Mac accurately reported its credit risk or its exposure to credit risk from nontraditional mortgages, are you?

MR. FRANK: Objection.

A. I'm sorry. I didn't understand your question. Are you asking me whether I have seen some evidence that on November

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20th, market learned that Freddie Mac had not been disclosing these things accurately?

I -- I don't understand your question.

Q. No. I'm sorry. That's not my question. I'll get there eventually. But a basic foundational question here, I just want to understand, you're not giving an opinion, one way or another, that Freddie Mac accurately reported its exposure to credit risk from nontraditional mortgages?

A. No, I am not offering an opinion one way or another.

Q. You are offering the opinion, though, and correct me if I'm wrong, that any misrepresentations or omissions relating to Freddie Mac's exposure to credit risk from nontraditional mortgages played no part in the stock decline of November 20th?

MR. FRANK: Objection.

A. Could you repeat the question?

Q. Yes. It's my understanding that you are giving the opinion that any misrepresentations or omissions relating to Freddie Mac's exposure to credit risk from

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nontraditional mortgages played no part in the stock decline of November 20th?

MR. FRANK: Objection.

A. So what gives me pause is the verbiage "played no part." The only way I can interpret that topic in the context of price impact is whether any disclosure on that day, or any information market learned pursuant to the disclosures by Freddie Mac on that date, revealed to the market that Freddie Mac had been underreporting credit risk from nontraditional mortgage products, as you say.

Q. You'd agree that on November 20th, 2007, Freddie Mac disclosed large losses and write-downs; correct?

MR. FRANK: Objection.

A. It disclosed losses and write-downs, yes.

Q. And you would agree that those losses and write-downs were caused, in significant part, by Freddie Mac's deteriorating credit?

MR. FRANK: Objection.

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A. The losses and write-downs were, in part, driven by deteriorating credit in the mortgage market; and, of course, Freddie Mac was exposed to the mortgage market as the market knew.

Q. Are you opining that no part of the losses and write-downs resulted from undisclosed credit risk from -- exposure from nontraditional loans?

MR. FRANK: Objection.

A. I'm sorry. I'm going to ask you to repeat the question.

Q. Sure. Are you opining that no part of the -- of the losses and write-downs resulted from undisclosed credit risk from exposure to nontraditional loans?

MR. GOLDFARB: Objection.

A. No, I'm not analyzing components of the loss that Freddie Mac reported on that day. In a way, implied by your question, I'm only analyzing whether the market, when it reacted to the disclosures on that day, any part of that reaction reflected market learning about previously undisclosed

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disclosure deficiencies as alleged in the Complaint.

Q. Are you opining that no part of the market's reaction on that day was due to materialization of risks that were caused by Freddie Mac's exposure to undisclosed nontraditional loans?

MR. GOLDFARB: I'm sorry. Would you please repeat?

MR. MARKOVITS: Yeah. I'd better repeat that because that's not what I meant to ask.

BY MR. MARKOVITS:

Q. Are you opining that no part of the 29 percent stock decline, on November 20th, 2007, was due to the materialization of credit losses that resulted from undisclosed exposure to risk from nontraditional loans?

MR. FRANK: Objection, form.

A. For the market to react to whatever it reacted to on that day, a necessary condition is that the market learned something that it did not previously know. So regardless of whether or not there

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were undisclosed exposures and risks from those exposures, and regardless of whether or not some of the risks that realized and were reported by Freddie Mac arose from such sources, the market's reaction on that day that caused the 29 percent stock-price decline, there is no evidence that any part of it came from disclosures that would have informed the market of the disclosure defects alleged in the Complaint.

Q. And that may have implications for a corrective disclosure situation. I'm talking about materialization of the risk now.

So my question is this. Let me give you an example. You don't fully disclose your exposure to nontraditional mortgage risk. On November 20th, you have an unexpected $2-billion loss that results from that undisclosed exposure. The market doesn't know that that loss results from the exposure but the market reacts because it's unexpected, and the stock goes down 29 percent.

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Are you saying that the market has to realize that the loss was from the undisclosed exposure to nontraditional mortgages in order for there to be a materialization of the risk?

MR. FRANK: Objection.

A. So the market can only -- if the object of the analysis is the price drop on the 29th, Freddie Mac announced a loss, the market price dropped, at least in part, related to the loss that Freddie Mac announced. I didn't see any commentary that said, we know quite a bit about Freddie Mac's guaranteed portfolio positions, its retained portfolio positions, its lines of business that it is in. And this $2-billion loss cannot be explained by mortgage market fundamentals, unless there was an undisclosed risk exposure that was not previously disclosed and now that it has materialized.

In other words -- but nobody in the marketplace said that this $2-billion loss is not consistent with materialization of previously known and disclosed credit risk

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that is on Freddie Mac's balance sheet. So there is no evidence that I have available, based on everything that I have reviewed, that allows me to link the price drop on that case to market learning, previously undisclosed risk that have now materialized. That is the extent of my analysis.

I've not sat down and looked at Freddie Mac's accounting statement, work papers or what have you. I can't answer questions about what were the components of that $2-billion loss. Freddie Mac announced $2-billion loss. There was a price decline. Nobody said, Hey, this $2-billion loss is inconsistent with previously disclosed risk, period.

Q. Okay. If it was consistent with previously disclosed risk, it wouldn't be unexpected?

MR. FRANK: Can we go off the record for one second --

MR. MARKOVITS: Sure.

MR. FRANK: -- and figure out our telephonic issues.

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THE VIDEOGRAPHER: The time now is 13:32. We're off the record.

(Recess taken at 1:33 p.m. to 1:33 p.m.)

THE VIDEOGRAPHER: The time now is 13:33. And we're on the record.

MR. MARKOVITS: I thought I had finished a question.

Could you read back the last question?

THE REPORTER: "If it was consistent with previous -- "If it was consistent with previously disclosed risk, it wouldn't be unexpected." And then we got him to go off the record.

MR. FRANK: Objection. You can answer.

A. That's not true at all, as a matter of economics. So, for example, you can have an insurance company that provides a lot of property insurance in Florida. Everybody knows that the company provides a lot of property insurance in Florida. So it's known that it's exposed to risk of property damage in Florida.

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And then, a hurricane of the century hits Florida. That's a negative development, and you could see the stock price of that insurance company, if it's publicly traded, take a hit because now it's just realized a lot of losses. The losses were not expected because the hurricane was a probability but not a certainty. But in this example, there is no implication that, just because there were unexpected losses, there must have been some undisclosed risk. That is not a logical inference.

Q. So I just want to make sure I understand your opinion and your testimony.

If Freddie Mac discloses on November 20th or one of the analysts states on November 20th, "Freddie Mac took a large loss in their credit position, in large part, stemming from nontraditional mortgages," which they took on in 2006 and 2007, would be -- would that be sufficient, in your view, to tie price impact on November 20th, 2007, to the allegations of the Complaint?

MR. FRANK: Objection.

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A. I'd have to see the details but not necessarily. Freddie Mac told the whole world. And if I recall correctly, Third Amended Complaint actually cites to Freddie Mac's disclosures that, in its retained portfolio, it had mortgage back securities of subprime mortgages. They were securities that were rated AAA.

And, in fact, from what I recall on November 20th, Freddie Mac announced that it took some marks on securities in its retained portfolio backed by subprime mortgages, but said they were all rated AAA and we don't ultimately expect to realize any losses.

In this, a liquid market, there is an effect on the marks. And I don't recall anybody saying that the $2-billion loss announced by Freddie Mac is not reconcilable or is particularly surprising, given that we've heard announcements by Citigroup, as you said, and Morgan Stanley and a lot of other financial forums as to what kind of markdowns people are taking on their

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portfolios.

Nobody said this indicates that Freddie Mac's credit risk exposure to nontraditional products must be greater than what they have so far disclosed. I did not see that commentary.

Q. Did you see commentary that said that the credit losses that were taken were tied to increased and unexpected credit losses on nontraditional mortgages?

A. I don't particularly remember the language, but I don't think such a statement would be logically related to an inference, that just because there were unexpected losses, there must have been undisclosed bad stuff out there.

And going back to my hurricane example, losses from hurricane in Florida were unexpectedly large. But that doesn't have any necessary implication that the insurance company was secretly exposed to property risk in Florida, and that's the only reason losses were unexpectedly large. The new development could be unexpectedly large.

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Q. So, in your view, you can rule out price impact because nobody specifically said, "There's a larger than expected exposure to nontraditional loans, and we believe they weren't truthful in their prior exposure." You need that second clause, and if you don't have that second clause, you rule out price impact?

MR. FRANK: Objection.

A. The answer is no for two reasons. I don't think I conditioned my statement to the second clause in your hypothetical.

Q. All right. So without the second clause, can you have price impact -- can you rule out price impact if there's a statement that the loss -- unexpected loss was caused, in large part, due to credit losses stemming from nontraditional mortgages? Can you rule out that those credit losses were due to -- or related to risks that were not previously disclosed?

MR. FRANK: Objection.

A. Sir, I'm not a lawyer, and I'm not going to get into what the Court will

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consider as adequate evidence of price impact on this materialization of risk theory. I don't understand the nuances from a legal perspective.

As a matter of economic logic and economic evidence, I did not see anything linking the disclosures on that day or market's interpretation of those disclosures, to new learning by the market of previously undisclosed risk or exposures. And as a matter of economic logic, a loss is announced and that is a surprise and the market price reacts, can you bet on the basis of those observations alone, rule out that there may be some fraud behind the loss, as a matter of logic, you can't. But you can't demonstrate any evidence linking the loss to the fraud either.

Q. So your testimony is you can't rule out that that loss was linked to a failure to disclose the true extent of the risk of nontraditional mortgages; right?

MR. FRANK: Objection.

A. You're asking me can you rule out

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the unknowable. We observed the loss. That was unexpected. We saw no evidence that anybody learned that loss as stemming from previous disclosure defects.

And if you ask me a logical question, based on this observation, can you rule out that there was never any fraud that wasn't ever told to the market but existed? No. I can't, as a matter of logic, rule it out. But, by the same token, there is no evidence that indicates that there was.

Q. Okay. So what you're saying at this point is that you have not seen sufficient evidence, from your perspective, for Plaintiffs to show -- to prove that there was price impact on November 20th, 2007?

MR. FRANK: Objection.

A. Based on all the evidence that the market learned on November 20th and prior to November 20th, as represented in the mix of information in the marketplace as of November 20th, there is no evidence that links any of the price drop to either materialization of previously undisclosed risk or corrective

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disclosures of any other type of disclosure defects that are alleged in the Complaint.

Q. Okay. And could you answer my question, which is: You are testifying that the Plaintiffs cannot prove that there was price impact on November 20th, 2007, as a result of undisclosed credit risk arising from nontraditional mortgages?

MR. FRANK: Objection.

A. I can't testify to what the Plaintiffs can or cannot do. But on the basis of the evidence that I examined and we are discussing, that evidence does not seem like -- it's inconsistent with a claim that it links the price drop on November 20th to Plaintiff's allegations.

Q. Do you know to what extent Freddie Mac adhered to its underwriting guidelines during the class period?

A. I haven't examined that issue and I don't know.

Q. You're not opining that Freddie Mac fully and accurately disclosed its adherence or lack of adherence to its

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underwriting guidelines?

A. Correct.

Q. Are you opining that no part of the 29 percent stock decline on November 20th, 2007, was due to Freddie Mac's failure to adhere to its underwriting guidelines?

A. What I am opining on is, there is no economic evidence that I saw that would allow me to conclude that some part of the price decline on November 20th was caused by Freddie Mac's failure to adhere to its previously disclosed underwriting guidelines.

Q. If Freddie Mac disclosed that it had -- let's suppose Freddie Mac disclosed that it failed to adhere to its underwriting guidelines on November 20th, would that be a sufficient link for you?

MR. FRANK: Objection.

A. I think that's an incomplete hypothetical. I assume you're asking me a hypothetical. Are you asking me a hypothetical?

Q. Yes.

A. Okay. I would say that's an

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incomplete hypothetical.

Q. In what respect?

A. Well, Freddie Mac would have announced, "We are not adhering to our previously disclosed underwriting guidelines. We've, in fact, been more strict in not disclosing underwriting guidelines "

Q. Good qualification. All right. Let's say they disclose that they were not adhering and that they were being less strict or more relaxed, would that be a sufficient link to the Plaintiff's allegations, in your view?

MR. FRANK: Objection.

A. Well, then there would be questions of whether the deviations were material, whether relaxing those underwriting guidelines, on the one hand, increased credit losses, but on the other hand, might have done more than offsetting good. So it depends on facts and circumstances.

Q. So in this circumstance, if there were reports that Freddie Mac had relaxed its underwriting guidelines, in the context of

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this November 20th, 2007, stock decline, that, in and of itself, wouldn't be a sufficient link for you to suggest that some part of that 29 percent stock decline was caused by the relaxation of underwriting guidelines?

A. So in your --

MR. FRANK: Objection. Sorry.

A. In your hypothetical, are you asking if there were reports prior to November 20th that Freddie Mac was relaxing its guidelines or something different?

Q. Something different, after November 20th.

A. Again, just to be precise, not to not be forthcoming, when you say "after November 20th," presumably, you don't mean November 22nd only here? You mean on November 20th?

Q. No. I mean, let's -- let's do the time period that you were talking about, which was the November 20th and the following week. There were analysts' reports and news articles and various public information that

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related back to November 20th; correct?

A. They were discussing what they learned on November 20th. If they also discussed what they learned on November 27th, for example -- and by then, the 29 percent stock price had already happened -- then, obviously, it couldn't be related to the 29 percent stock-price drop on November 20th.

Q. But if there was -- if there was an indication that -- or there was a recognition that the November 20th stock decline -- strike that.

Let's suppose there was a recognition post-November 20th that there had been a relaxation of underwriting standards and that was unexpected and new, would that be a sufficient link in your view?

A. Again, I think you're giving me an incomplete hypothetical. Stock-price decline happened on November 20th.

THE REPORTER: Twenty-ninth?

A. November 20th. I did not see any discussion, that I can recall, in the analysts' reports discussing their

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interpretation of the new information received by the market on November 20th, that said, you know, "I told my clients to sell the stock, even after it had declined by 20 percent, because I learned that they had relaxed their underwriting guidelines, and that was a negative surprise to me that warranted my expecting that the stock price would go down further."

They don't have to be exact same words, but I saw no commentary that said, when the market reacted on November 20th, and there was a 29 percent stock-price decline, that contemporaneous commentary said, "Hey, it looks like Freddie Mac relaxed its underwriting guidelines and that's not good for Freddie Mac, so stocks should go down." There was no such commentary, or in the spirit of such commentary, that I can recall.

Q. And let's talk about if there were no words. Let's suppose that there was, undisclosed to the public, a significant relaxation of underwriting standards by Freddie Mac; as a result of which, there were

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large credit losses that were disclosed on November 20th. What link, beyond that, does there have to be, in your view, to show price impact under a materialization of the risk standard?

A. So, again, my -- listening to your question tells me that maybe there's some legal nuance you're referring to, to establish the link that you're talking about. And I want to make clear I'm not a lawyer, and I don't understand those nuances.

As an economist, what I can do is I can look at mix of public information at a point in time -- new, unexpected information received at that point in time -- the market price reaction current -- currently with that new information and say whether the concurrent new information interpreted in light of mix of public information that existed is consistent with the hypothesis that the 29 percent stock-price drop represented realization of previously undisclosed risks or correction of disclosure defects alleged by the Plaintiffs. That's

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the beginning and the end of what I did and what I am able to do, given my expertise.

Q. Right. And I want to explore one component of that, which is the realization of previously undisclosed risks.

So you have underwriting standards. Freddie Mac ignores them. There's a $2-billion loss. The market reacts to that $2-billion unexpected loss with a stock decline of 29 percent. What more, under your analysis, needs to be done to link up the undisclosed underwriting violations or lack of adherence with the 29 percent stock decline?

MR. FRANK: Objection.

A. You know, I don't understand the question. And what is it about my previous answer that you're trying to supplement so I am responsive to the latest question? I just don't understand it.

Q. All right. Your answer was that you analyzed the information and you looked at both, whether there was a corrective disclosure with the realization of an

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undisclosed risk. I want to focus on the realization of the undisclosed-risk prong of your answer.

And I'm providing a hypothetical. The hypothetical is: I view a realization of undisclosed risk as they didn't follow their underwriting standards; they didn't disclose that they weren't following the underwriting standards. Unexpected $2-billion loss. Stock goes down 29 percent.

Tell me why that's not the realization of an undisclosed risk.

MR. FRANK: Objection.

A. So, in your hypothetical, are you assuming that the cause of that $2-billion loss, which, in your hypothetical, was realization of credit losses from risks not previously disclosed, in your hypothetical, does the market know that was the source of loss or a part of the loss or not?

Q. No. I'm saying let's just suppose they don't know. The market, on November 20th, doesn't know, let's suppose, that Freddie Mac was not following its

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underwriting guidelines, but, in point of fact, the $2-billion unexpected loss, which the market reacted to, resulted from their failure to adhere to underwriting guidelines. Is that, in your view, the realization of an undisclosed risk?

MR. FRANK: Objection.

A. From an economic perspective, as against whatever legal nuance there may or may not be, the link that you're drawing on that hypothetical would only be observed in what economists call strong form efficient market; namely, market reacts to not only what is publicly known, but the market reacts to things that are not even public.

So if the legal framework that guides the analysis of an economist, such as myself, was, that we assume a strong form efficient market, then from an economic logical perspective, I would say under your hypothetical that link would be there. But that's not my understanding.

Q. Okay.

A. And that's not my understanding of

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either the legal context or how the world works. The market does not react to what it doesn't know. So I don't know what kind of a link there would be to market's reaction and something that was unknown and present simultaneously. I don't understand what kind of a link there would be.

Q. All right. Let's explore that a little, Doctor. Semi-strong form efficient market.

A. Yes.

Q. Large publicly traded stock, like Freddie Mac, discloses a $2-billion loss. No explanation of the loss. The market doesn't understand or know why that loss occurred. Are you testifying that the market wouldn't react in that situation?

A. No, I said nothing of the sort.

MR. GOLDFARB: Objection.

Q. All right. So the market would likely react; correct?

A. The market would react to an unexpected loss, period.

Q. Right. And so, you got an

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unexpected $2-billion loss. The market reacts likely by a stock decline; correct?

A. Okay.

Q. All right. And that would happen in a semi-strong form efficient market; correct?

A. Okay.

Q. Now, what I want to ask you is: Let's assume the market didn't know why there was the $2-billion unexpected loss, but I'm asking you to assume that it was related to undisclosed failure to adhere to underwriting standards, why isn't that the realization of an undisclosed risk under the two-pronged answer you gave last -- a few questions back, which talked about corrective disclosures and realization of undisclosed risks?

MR. FRANK: Objection.

A. So in your hypothetical, you built that link in by assumption, by asking me to assume a hypothetical where the market learns of the loss, and you know the market didn't know this loss was due to fraud, and then you're asking me if the market reacts to the

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loss, was it reacting to the fraud? The answer is tautologically yes, under the assumption of that hypothetical. There is no economic analysis.

Q. Right.

A. No factual analysis that would lead to your hypothetical getting an answer different from where you are leading me to. It's not a rebuttable hypothesis.

Q. Fair enough. So that, if the proof in this case were to show that a large part of the $2-billion loss that occurred on November 20th, 2007, was due to undisclosed failures to adhere to underwriting standards, then you would agree with me that those price impact?

MR. VOLPE: Objection.

A. Not as I understand the term "price impact" from an economic perspective.

Q. And what is the -- how do you understand price impact from an economic perspective?

A. It's impact on the price due to new public information. Market learns

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something new, the price reacts. There is an impact that goes from information to the price.

Q. Then we'd have to qualify at least one prong of your answer, as I understand it. Price impact from an economic perspective would mean materialization and disclosure of a previously undisclosed risk; correct? Because if it needs new public information, you're saying it needs to be disclosed. So you can't have materialization of an undisclosed risk that creates price impact, given your economic definition of the term, absent disclosure?

A. Disclosure or inference or something that links in the marketplace the alleged realization of risk with the observable price decline; otherwise, it's in the head of whoever is making the assumption. There is no objective observable that would connect the two.

MR. FRANK: Bill, we've been going about an hour. Can we take a short break now?

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MR. MARKOVITS: Sure.

THE VIDEOGRAPHER: The time now is 14:03. We're off the record.

(Recess taken at 2:03 p.m. to 2:22 p.m.)

THE VIDEOGRAPHER: The time now is 14:22. We're on the record.

BY MR. MARKOVITS:

Q. You earlier, I believe, acknowledged that one of the allegations of Plaintiff's Complaint relates to misrepresentation of its capital position? That's --

A. Yes.

Q. That's in your report at paragraph 9, small (v); correct?

A. Yes.

Q. Are you opining that no part of the 29 percent stock decline on November 20th, 2007, was due to disclosure of previously undisclosed weakness in Freddie Mac's capital position?

A. I don't understand the question. Capital is how much originally contributed capital in all the additions to retained

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earnings you had. And if you have losses, that reduces capital. That's the way I understand it.

So I don't understand your question as to -- can you -- can you explain that to me?

Q. Sure. In the analysts' reports that you reviewed and in Freddie Mac's disclosures, there were discussions relating to its precarious capital position as of that point in time.

A. Okay.

Q. Is that correct?

A. There were discussions about the need to raise additional capital for it to support the market, yes.

Q. And are you opining that that situation had no relation to the 29 percent stock decline?

MR. FRANK: Objection.

A. The fear that capital market -- the fear that Freddie Mac would have to raise additional capital or may want to raise additional capital, and in those market

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conditions, that would be a costly endeavor, would, of course, have contributed to some of the stock-price decline.

Q. Okay. And if their capital position that was disclosed on November 20th was worse than had been previously disclosed and was a result, in part, on -- of misrepresentations regarding the strength of their capital position, misrepresentations or omissions, in your opinion, would that show price impact?

MR. FRANK: Objection.

A. I'm sorry. Can you repeat your question?

Q. Sure. If on November 20th, part of what was disclosed was a weakness in capital position that caused analysts and stockholders concern and led, in part, to the 29 percent stock decrease, and, in addition, that disclosure was contrary to prior representations regarding Freddie Mac's contrary capital position, such that the prior representations or omissions were fraudulent, would that constitute price

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impact, in your view?

MR. FRANK: Objection.

A. So any time a company announces losses, those losses would lead to a reduction in its capital. Are you asking me that some of the losses that led to erosion in capital were due to fraud, or are you asking me to assume that the beginning level of capital was fraudulently overstated, so the decline in capital from the previous level to the level disclosed on November 20th was caused by a misstatement of previous amount of capital? I'm not understanding this hypothetical.

Q. All right. Let's suppose that there was a misrepresentation or omission by Freddie Mac prior to November 20th of its capital position and the strength of its capital position, such that the market believed that Freddie Mac could, from a capital perspective, weather the housing crisis storm. And let's suppose that on November 20th, the market learned that the capital position of Freddie Mac was not as

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strong as previously represented and that the capital position was going to cause difficulties for Freddie Mac going forward. Is that a sufficient link to prove price impact, in your view?
MR. FRANK: Objection.
A. So I think the hypothetical you gave me is incomplete. And I can explain why, to me, it is incomplete.
Q. Okay.
A. So let's say there is a company which has capital of $10, and the company has an unexpected loss having nothing to do with fraud of $2. So if you started with $10 of capital, you have $2 of loss, now you have $8 of capital. And now, that $8 of capital may be less than ideal in the new market conditions, so the company is anticipated to raise additional capital.
In this scenario, if the loss that led to reduction of capital is not due to fraud, disclosed or not, the reduction in capital may well be unanticipated, but that would be unanticipated mechanically from the

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loss being unanticipated. And in this scenario, I don't see how you link the fraud to the realization that $8 of capital in my example is less than ideal and the company would like to raise more capital.
Did I misunderstand your hypothetical, or is there something more to it?
Q. Well, I think you did, but so -- but let's just take your hypothetical and let's switch the assumption a little. Let's suppose the loss was due to fraud. So it goes down from $10 to $8 due to fraud. Is that a price impact link, in your view?
MR. FRANK: Objection.
A. It seems to be, by your assumption, that the loss that led to the capital decline was due to fraud, then, of course, the concern due to lack of adequate capital is therefore, by inductive logic, related to the fraud and that would establish the link.
But this is a hypothetical. I want to clarify. I've seen no evidence along

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the lines that the loss was due to the fraud, whether disclosed or undisclosed. I know we focused on disclosures a little while ago, but I want to make sure that -- I have seen no evidence that any of the loss announced on that day that was higher than expected was due to the alleged fraud, regardless of whether that was disclosed or not.
Q. You're aware that Professor Feinstein's report addresses the eight Cammer-Krogman factors; correct?
A. Uh-huh. Yes.
Q. And in your view, if Cammer 5 -- Cammer *Factor 5 is not part of the analysis, your opinion is that a Plaintiff cannot prove market efficiency sufficient for the Basic presumption to apply; correct?
MR. FRANK: Objection.
A. Yes, under these and almost any other circumstance I can imagine.
Q. In your opinion, Cammer Factor 5 requires an event study?
A. Yes. Because Cammer Factor 5 is about cause and effect. And the way a

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financial economist finds cause-and-effect relationship is through an event study.
Q. Now, without an event study demonstrating cause and effect, your opinion is there can be no finding of market efficiency?
A. The economic evidence would be insufficient, in my opinion, to conclude semi-strong form of market efficiency.
Q. So, in your opinion, if Cammer Factor 5 is not addressed and found, the other Cammer-Krogman factors are irrelevant because they're neither sufficient individually or collectively to prove market efficiency?
A. I wouldn't quite say they are irrelevant. They are structural factors that inform our judgment that market conditions facilitate market efficiency, but they are not sufficient, either individually or collectively, to establish semi-strong form of market efficiency.
Q. Is Cammer Factor 5, in your view, both necessary and sufficient to prove market

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efficiency?

MR. FRANK: Objection.

A. Well, it's certainly necessary. I can imagine circumstances where Cammer Factor 5 is not implemented sufficiently thoughtfully that it would not be sufficient.

Q. Let's assume it's implemented thoughtfully and correctly. In your view, that provides direct evidence of market's efficiency; correct?

MR. FRANK: Objection.

MR. GOLDFARB: Objection.

A. Yes, recognizing that the words "thoughtfully and correctly" have been left unspecified here, yes. If there is an adequate showing from an economic perspective of Cammer Factor 5, then, assuming the market is at least weak form efficient, then that Cammer Factor 5 analysis would be direct demonstration of cause-and-effect relationship, i.e., semi-strong form of market efficiency.

Q. So if Cammer Factor 5 is addressed and found and found properly, the other

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Cammer-Krogman Factors would not be necessary to find market efficiency, in your view?

MR. FRANK: Objection.

A. They may have some marginal relevance in giving you comfort that market conditions are such that you can have -- that they would facilitate market efficiency and your Cammer Factor 5 study is reliable. And, in that sense, they would be helpful; but by themselves, they are not sufficient.

Q. You're aware that many courts have found market efficiency without resolving Cammer Factor 5 in the Plaintiff's favor?

MR. FRANK: Objection.

A. I don't keep track of court decisions. If they have, then I don't know the circumstances. But from an economic perspective, I think there is isn't an adequate showing of market efficiency without a sound Cammer Factor 5 analysis.

Q. You didn't do an event study to determine market efficiency in this case; correct?

MR. GOLDFARB: Objection.

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A. It was not within the scope of my assignment to do an affirmative analysis of market efficiency in this case. As I understand it, it's Plaintiff's burden to make that showing.

Q. I believe you're correct.

But in other cases where testifying on behalf of a defendant with respect to market efficiency, you've done event studies; correct?

A. In some cases, I might have. In some cases, I might not have, depending on my assignment in that case.

Q. And the null hypothesis in Professor Feinstein's event study --

A. Actually, may I --

Q. Yes, you may.

A. -- just clarify my answer slightly?

Q. Sure.

A. So to the extent I explored Mr. Hallman's model, talked about deficiencies in that model, replicated his results and explored the implications of

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making corrections, in that sense, I've done an event study. And the same applies to Dr. Feinstein, in that I replicated his models, replicated his analysis, pointed out shortcomings in his analysis and explored the implications of it.

I did event-study work in connection with the fact that mine is a rebuttal report. I did not do Dr. Feinstein's job for him.

Q. And the object of an event study for a Plaintiff's expert is to disprove the null hypothesis and demonstrate that the market is efficient?

MR. FRANK: Objection.

A. Can you repeat the question?

Q. The object of the event study that Dr. Hallman and Professor Feinstein were conducting was to disprove the null hypothesis and demonstrate that the market is efficient?

MR. FRANK: Objection.

A. I'm sorry. Your question is incomplete. Did you say -- what did you say

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their null hypothesis is supposed to be?

Q. Well, let's start there. What is the null hypothesis for -- for Dr. Feinstein and -- or for Professor Feinstein and Dr. Hallman?

MR. FRANK: Objection.

A. Well, I have a more recent memory of Dr. Feinstein. I haven't looked at Dr. Hallman's report since early 2013. So I'll speak to that, if you don't mind.

Q. Fine.

A. Dr. Feinstein has tasked his event-study analysis as whether or not he can reject the null hypothesis that market is not efficient. So, in other words, if the null hypothesis is that there is no price response to any cause, then the market is inefficient. And if I show threshold level of evidence that says there is sometimes a cause and effect, barely more than enough to reject the hypothesis that there is no cause and effect, that is adequate showing of market efficiency.

And that is a key issue and a key

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blindside on Dr. Feinstein's part, leaving aside his implementation, problems and all the other mistakes he made that I pointed out and his evidence not being sufficient on its own terms, the market efficiency definition is, and he admitted so, that if a market is semi-strong form efficient, all material cause events will lead to an effect.

It's not cause events will sometimes lead to an effect and sufficiently numerous that the market is not demonstrably inefficient. The threshold is -- the standard is it will happen every time, not barely more than 5 percent or 6 percent of the time. That's the way he formulated his statistical calculations.

Now, as I said --

Q. I'm sorry.

A. -- all the time, given that we are talking about statistical tests, may mean practically 80 to 90 percent of the time. But by definition of market efficiency -- and if you think about basic and reliance and for what purpose market efficiency is being

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tested -- it's not just about statistics.

The presumption of reliance is if you -- Plaintiffs alleged 25 disclosure defects, if the Court says you have presumption of reliance, for all 25 of those disclosure defects, you are entitled to the presumption that they impacted the stock price. Not 20 percent of them did, not 30 percent of them did, not 10 percent of them would.

There would be no point in the test, which is the basis for market efficiency, which is common issues predominate.

If you have a class period and you alleged 25 misrepresentations, and based on your evidence provided by your expert, you could tell the Court, "Your Honor, there's 25 percent chance that if there is a cause, there is an effect." There cannot be a common class with common issues that predominate. Because which of the 25 alleged misrepresentations would elicit a price impact, 25 percent of them? Which ones?

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That would lead to individual issues predominating.

So the logic of this is that there's a blindside in the way Professor Feinstein set up his test, leaving aside all his implementation errors, all his methodological errors, all his statistical calculations.

Q. Are you done?

A. Yes.

Q. I believe the question was: What was Dr. Feinstein's null hypothesis? You then proceeded, for about a 5-minute lecture, that had nothing to do with the answer to that question.

Could you please confine your answers to the questions asked.

You indicated the null hypothesis for Professor Feinstein was that the market was inefficient; correct?

MR. FRANK: Objection.

A. Yes.

Q. All right. To demonstrate that the market was inefficient with an event

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study, the null hypothesis would have to be that the market is efficient; correct?
MR. FRANK: Objection.
A. I don't know that I can agree to any such statement. I don't understand what you're asking me and what's the significance of it and what is the relevance of it in the context of testing for market efficiency for reliance.
Q. All right. Forget about the context of testing market efficiency for reliance. Let's talk about just the context of testing market efficiency. If we wanted to test for market inefficiency and use an event study to do so, the null hypothesis would be that the market is efficient; correct?
MR. FRANK: Objection.
A. So it is true that a demonstration that market evidence is inconsistent with market efficiency often enough would lead to a valid statistical conclusion and an economic conclusion that the market was not, in fact, efficient for the period tested, for

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the type of events tested, et cetera.
Q. And one of your criticisms of Professor Feinstein is that he performed a mechanical review of the Cammer-Krogman factors; is that correct?
MR. VOLPE: Objection.
A. Yes.
Q. And you similarly used that term "mechanical" when applying or when reviewing Dr. Hallman's analysis of the Cammer-Krogman factors; correct?
A. Yes.
Q. And you've used that phrase "mechanical" in other reports where you've addressed opposing experts' application of the Cammer-Krogman factors; correct?
A. Yes, whenever I see a checklist approach -- there are eight factors -- check the Box 1, done; check the Box 2, done. I call that a mechanical way of addressing Cammer-Krogman factors.
Q. Okay. That was going to be my next question. So that's what you mean by "mechanical"?

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A. Yes, without explaining necessarily how it ultimately leads to the overall conclusion of the market efficiency, if that's what you're conclusion is.
Q. So how would one perform a nonmechanical review of, let's say, Cammer Factor 1, average weekly trading volume?
A. So one would explain why, from an economic perspective, weekly trading volume being above a threshold would facilitate market efficiency. Depending on the context and finding, one might even say that it's not necessarily a monotonic relationship, that more volume is always good.
Sometimes too much volume can indicate overly speculative trading activity that would actually impede market efficiency. One would put that in context of what the volume was, how does it relate to contemporaneous evidence on other large stocks traded in very developed markets.
One might say: Was there enough trading volume by institutions? Did the market handle large trading well? So I would

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hope that, instead of being a checklist of factors, one would give a little economic motivation for the factor, look at the empirical evidence and explain why, in a particular case, your findings support the conclusion of market efficiency.
Q. Could you turn to paragraph 96 of your report? In this you're talking about the Z-test, and you provide an example where you say, "Suppose there were 100 material news days for publicly traded 'Company A,' over a class period of 500 days in total."
And I want to focus on the next sentence. "The logic of Basic and informationally efficient markets dictates that all or most of these 100 news days should result in statistically significant abnormal returns for Company A."
Do you see that?
A. Yes.
Q. Are you defining material news there in that sentence -- or in those two sentences, as -- when you're talking about a hundred material news days, are you defining

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material news as news that is likely to produce a statistically significant abnormal return?
A. That is likely to be materially significant for valuation of the company and important to investors; and, hence, expected to return, result in a statistically significant stock-price reaction.
Q. So if you're defining the hundred material news days as days on which you would expect a statistically significant abnormal return, isn't the conclusion that those news days should result in a statistically significant abnormal return in tautology?
A. No, but that's the hypothesis you're testing. As an economist, you observe a certain piece of information that -- you're wearing your economic hat, it tells you it is material news. It should be expected to result in a material stock-price effect. And then you test whether it, in fact, does or not. That's where the test comes in.
You're ex-ante hypothesis is that it should, and then you check whether that

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hypothesis is actually something that happens. And you do that on each of the hundred news dates. And if you find that there was a price reaction on 30 or 40 or 20 or 12 of them, regardless of the proportion of non-news dates when there is price reaction, that is not sufficient evidence, in my opinion, to conclude market efficiency for reliance purposes.
Q. I want to read something to you and see if you agree with it.
A. Okay.
Q. "In fact, Defendants have frequently argued that some large number of dates with news should be associated with statistically significant stock-price movements. Yet, it is not clear if there is any case in which Defendants have cited some empirical or even sound theoretical basis for an argument that there should be some minimum fraction of news days associated with statistically significant returns."
Would you agree with that statement?

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MR. GOLDFARB: Objection.
A. I think I may have more than one comments on that statement, but it was kind of a longish statement. If you don't mind repeating it and maybe putting it in two or three parts, I'd be able to be more responsive to you.
Q. Sure. There's two sentences. Let's split them up.
MR. GOLDFARB: Are you reading from his report here?
MR. MARKOVITS: No.
MR. GOLDFARB: Okay.
MR. MARKOVITS: It's actually from -- there's no hidden ball here. It's from Dr. Tabak's work titled "What Should We Expect When Testing For Price Response to News and Security Litigation," which I believe you cited in your report.
BY MR. MARKOVITS:
Q. And on page 5 of that article, Dr. Tabak states -- I'll just go with the first sentence -- "In fact, Defendants have

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frequently argued that some large number of dates with news should be associated with statistically significant price movements."
Actually, I don't really care if you degree or disagree with that. So let's move on to the second statement.
A. You have to be of help.
MR. GOLDFARB: Objection. So there's no question?
MR. MARKOVITS: There's no question there.
MR. GOLDFARB: Okay.
MR. MARKOVITS:
Q. Moving on. Let's just focus on the second part of his quote.
"Yet, it is not clear if there is any case in which Defendants have cited some empirical or even sound theoretical basis for an argument that there should be some minimum fraction of news days associated with statistically significant returns."
Would you agree with that statement?
A. So first, I'd have to see the

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sentence in the context in which David Tabak wrote it. But taking the sentence on its own terms, without the context and with that caveat, I absolutely disagree.

The definition of market efficiency and the whole basis of reliance is that Plaintiffs should be able to benefit from a presumption that, as long as they have demonstrated a material disclosure defect that's actionable, the Court will presume, without further examination, that in each and every one of those instances there has been a price impact.

By the definition of market efficiency, which Dr. Feinstein agreed with, the implication is in each and every percent, a hundred percent of the cases, in each and every case, when there is material news, there should be a price impact.

And there are many authorities, some of which I've cited in my report, that are absolutely consistent with that. And Judge Cedarbaum couldn't be clearer in a related case of Freddie Mac-Quasar.

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That is the standard. That's her understanding of the standard too, to say that there is no magic number in proportion. The most charitable interpretation of that sentence is, it is, in fact, a magic number. It's a hundred percent. But given the noise in the data, depending on the sample size, sometimes you could say, "Well, 80 percent of material news days eliciting a price response is close enough to be statistically inextinguishable from a hundred, sometimes it might be 90."

And I've given you some calculations, some examples as to how that less than a hundred percent but close enough to a hundred percent works. And that is the standard. There is no other standard.

Q. And you mentioned Judge Cedarbaum. With all due respect to Judge Cedarbaum, do you know whether or not her view on this issue is in distinct minority of courts that have addressed it?

MR. FRANK: Objection.

A. I'm not somebody who researches

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judge's decisions and categorizes them. I don't know.

Q. Let's talk briefly about Cammer Factor 1, the average weekly trading volume. And I can pull out his report, if you'd like, so you can refresh your recollection.

But Professor Feinstein found an average weekly trading volume of 3 percent; is that correct?

A. I don't remember. Maybe you should pull out his report.

MR. MARKOVITS: Let's go off the record for one second, please.

THE WITNESS: As long as you're going off the record, can I go to the washroom?

THE VIDEOGRAPHER: The time is 14:45.

MR. MARKOVITS: Excuse me?

THE VIDEOGRAPHER: We're off the record.

(Recess taken at 2:45 p.m. to 3:12 p.m.)

THE VIDEOGRAPHER: The time now is 15:12. We're on the record.

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BY MR. MARKOVITS:

Q. Dr. Bajaj, before the break, we were just talking about average weekly trading volume in Professor Feinstein's report, which you have now in front of you and it has been previously marked as Exhibit 96. And if you would look at paragraph 54 of that report, I believe it can confirm that Professor Feinstein found an average weekly trading volume of 3 percent.

A. Okay.

Q. Do you disagree with Professor Feinstein's calculations with respect to that factor?

A. I haven't double-checked his calculations, but I'm happy to accept his calculations.

Q. Would you agree that average weekly trading volume of Freddie Mac stock was above 2 per -- 2 percent as a percentage of total outstanding shares?

MR. VOLPE: Objection.

MR. MARKOVITS: You object.

MR. VOLPE: I'm sorry?

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MR. MARKOVITS: I think he's trying to keep himself awake.

A. I agree 3 percent is higher than 2 percent.

Q. All right. Are you aware that many courts hold that anything above 2 percent justifies a strong presumption of market efficiency?

MR. FRANK: Objection.

A. I can take your representation for it.

Q. You don't believe, however, that the average trading volume above 2 percent is probative evidence with regard to market efficiency; correct?

MR. FRANK: Objection.

A. No, I don't think it's very probative all by itself. I think it's among the mix of factors, a helpful fact. That's it.

Q. And we can go back and look at this, if you'd like, but, in your prior deposition, we were talking about Cammer Factor 1. And you said, "But it is not

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probative evidence from an economic perspective."

Have your views on that point evolved?

MR. FRANK: Objection.

A. I think I said what I said in the context I said it. And I agree that just this factor by itself would not be strongly probative of market efficiency. It's a structural factor. It's a factor courts look at. And in the mix of other evidence, it is helpful to note.

Q. So with the qualification that it may not be strongly probative, would you agree that it's probative in some respect with regard to market efficiency?

MR. FRANK: Objection.

A. By itself, it does not have a significant probative value. I would not call a stock as trading in an efficient or an inefficient market based on this factor alone.

Q. And I want to make sure we're on the same page when we're talking about using

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the term "probative." When you say something is "probative," do you mean that it makes the issue to be proved more or less likely?

MR. FRANK: Objection.

A. Probative, meaning helpful. I wouldn't assign likelihood to it. It's indicated. It's helpful. But, by itself, it's not sufficient evidence.

Q. And that wasn't the question, though. Let's -- let's just talk about it in the context of market efficiency. Is a high average weekly volume probative of market efficiency in the sense that it's evidence that tends to make proof of an -- the existence of an efficient market more likely?

A. Yes.

Q. Just touching back on your price impact analysis. You reviewed certain analyst reports between November 20th and 27th; correct?

A. I'd have to refresh my memory but somewhere around there.

Q. And you can refresh your memory if you need to to answer this question. Do you

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know -- did you review all analyst reports that took place over those dates or some subset?

MR. MARKOVITS: *Jason, 129, 12 to 20.

A. So in paragraphs -- in paragraph 171 of my report, I discuss which analyst reports I reviewed. I cite to them, and I explain how I selected the reports that I reviewed. I can elaborate if that's necessary.

BY MR. MARKOVITS:

Q. Well, you have a report cited in two footnotes. In Footnote 211, you have a report cited by Dr. Feinstein; and then in Footnote 212, you say, "These analyst reports include the six mentioned in the previous footnote as well as..." and then you go on to list various reports.

My question is, to your knowledge, is that the sum total of reports by analysts that came out between November 20th and 27th or is it some subset?

A. So, as I say in the sentence that

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begins right after Footnote 11, which are the reports that Dr. Feinstein reviewed, in fact, none of the analyst reports over the seven days, November 20 to 27, that I reviewed considered Freddie Mac's disclosures, so on and so forth.

And then, Footnote 212 says that the reports that are referenced in that sentence include six that were reviewed by Dr. Feinstein and referenced -- or cited in Footnote 211, as well as additional reports that I reviewed.

As I sit here right now, I can't tell you that there is absolutely no other report that I may not have reviewed in this connection, but it was my intention to review reports comprehensively that were issued between November 20th and November 27th.

THE PHONE: Interruption.

MR. MARKOVITS: Siri doesn't need to use a speaker. Siri was just reading my mind.

BY MR. MARKOVITS:

Q. During the class period, Freddie

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Mac's common stock traded on the New York Stock Exchange; correct?

A. I'd have to refresh my recollection on that. Do you have a citation to Dr. Feinstein's report where he discusses that issue?

MR. GOLDFARB: I'm sorry. Would you read back the question and answer, please?

MR. MARKOVITS: The question was whether Freddie Mac common stock traded on the New York stock exchange during the class period.

MR. GOLDFARB: The common stock?

MR. MARKOVITS: Yes.

BY MR. MARKOVITS:

Q. I believe page 19 of Professor Feinstein's report addresses that.

A. Okay. I see that.

Q. And you'd agree that the New York Stock Exchange is a large national exchange?

A. Yes.

Q. You'd agree that it's likely that most stocks traded on the New York Stock

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Exchange most times are efficient?

MR. FRANK: Objection.

A. I've not done an empirical analysis, and I don't know what you mean by "most." But I think it's a fair inference that many of the stocks traded on the New York Stock Exchange trade in an efficient market many times.

Q. Okay. You can't agree that most stocks trade most times on the New York Stock Exchange in an efficient market?

MR. FRANK: Objection.

A. I think it's a bit imprecise. So without empirical evidence, I don't know if I want to say most. But I have no difference of opinion that New York Stock Exchange is a well-developed market and it facilitates stocks trading efficiently.

Q. Would you agree that for a large capitalization stock like Freddie Mac, with many market analysts, a high trading volume, active flow of information, and a listing on the New York Stock Exchange, it's reasonable to infer that stock prices are being

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determined in an efficient market?

THE REPORTER: "Inefficient"?

MR. MARKOVITS: In an efficient.

MR. FRANK: Objection.

A. So I think I expect stocks satisfying those characteristics many times to be trading in an efficient market, but I wouldn't say that those factors would obviate the need for direct evidence on market efficiency through Cammer Factor 5 analysis.

Q. But would the answer to my question be yes, that for large capitalization stock like Freddie Mac with many market analysts, high trading volume, active flow of information and a listing on the New York Stock Exchange, it's reasonable to infer that stock prices are being determined in an efficient market?

MR. FRANK: Objection.

A. No, I can't say yes to the language that you used in your question. I would say that all those factors facilitate an efficient market.

Q. Could you look back at the

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Footnote 212 of your report, which cites in it various analysts' reports. Did you review these analysts' reports?

MR. FRANK: Objection.

A. Yes.

Q. And I know that, for example, for the report, I know some of them may have been written by you, some of them may have been written by others and reviewed and accepted by you, but I want to clarify. With regard to reviewing these analysts' reports, was the review done by anybody else and reported to you, or did you actually review these analyst reports in coming to the opinions that you gave in this report?

MR. FRANK: Objection.

A. Both.

Q. Both. Some of them were reviewed by others, or they were reviewed by others and then you reviewed them?

A. They were collected by others, preliminarily reviewed by others, and then I reviewed them.

Q. Okay. So the reports mentioned

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here would have been reviewed by others and then reviewed by you prior to you signing off on the report?

A. Prior to my writing or accepting elements of writings in paragraph 171.

Q. Okay. And if you'd look at paragraph 212.

MR. FRANK: Paragraph or footnote?

MR. MARKOVITS: Oh, I'm sorry. Thank you.

BY MR. MARKOVITS:

Q. Footnote 212, about the fifth line down, a few words in, there's a quote, "Freddie Mac's strong retained portfolio growth in August with an analyst report dated November 25th, 2007."

Do you see that?

A. Yes.

Q. And it's your contention that that analyst report showed no contention -- or connection between Plaintiff's allegations and the disclosures that took place on November 20th, 2007?

MR. FRANK: Objection.

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A. On my conclusion from reviewing that and other reports referenced in that paragraph, is that none of these reports considered Freddie Mac's disclosures on November 20th, 2007, to be indicative of previously undisclosed risks about business model or materialization of undisclosed risk related to Freddie Mac's subprime exposure.

MR. MARKOVITS: Do you have that report? Could you mark this, please?

THE REPORTER: 188, Exhibit 188.

(Exhibit 188, Bates Nos. FMOPERS00221555 through -1560, marked for identification.)

BY MR. MARKOVITS:

Q. Dr. Bajaj, I show you what's been marked as Exhibit 188, which is an analyst's report about Freddie Mac with the title, "Strong Retained Portfolio Growth in August." And this is the analyst's report that's cited in that Footnote 212; correct?

A. So I notice in Footnote 212 the date of the report is November 25, 2007. And I think the exhibit that you handed me, on top, right-hand side, it indicates a date of

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25th September, 2007. So I don't understand that discrepancy.

The paragraph talks about reports between November 20 and November 27th, and Exhibit 188 seems to be a report that was issued on September 25, 2007.

Q. Exactly, Dr. Bajaj. It's a report by Credit Suisse dated September 25th not November 25th, 2007, with a title, "Strong Retained Portfolio Growth in August."

Would this indicate to you that the footnote reference is incorrect and, in fact, this analyst report took place before November 20th, 2007?

MR. FRANK: Objection.

A. Well, I'd have to look into it. Maybe that's the -- that's the issue. Or maybe there is another report that is dated November 25, 2007. I'd just have to look into that.

Q. Okay. But you'd agree with me that the report, Exhibit 188, that's in your hand and in my hand, could not -- or should not have been considered by you for

determining whether or not there was a price impact on November 20th, 2007?

MR. GOLDFARB: Objection.

MR. FRANK: Objection.

A. There's nothing wrong in looking at reports prior to that announcement date to understand what was the mix of information in the market as of that announcement date. But that footnote obviously refers to a report on November 25. And I'd have to look into why the report that you've handed me is dated September 25. Maybe it's an error, or maybe there is another report. I can't tell you, as I sit here right now.

Q. And you said there's nothing wrong with looking at reports prior to November 20th. But you didn't do that as part of your analysis, did you?

MR. FRANK: Objection.

A. I think my -- my report cites many analyst reports. Some of them are probably prior to November 20th. I just don't remember and it's late in the day, but you have the Documents Considered List.

Q. Yeah. Well, let's look at that on page 137 at the top of your report. Under "Analysts Reports" it lists 16.

A. Okay.

Q. I don't see any with a date before November 20th, do you?

A. No, I don't.

Q. Would that indicate that you didn't review any analyst reports or considered any analyst reports that took place before November 20th?

A. Yes, it's --

MR. FRANK: Objection. I'm sorry.

A. Yes, it's not in the -- no such reports are in the Documents Considered List.

Q. Dr. Bajaj, one of your critiques regarding Professor Feinstein is that his approach to an event study in this case is not the same approach he has taken in other cases; correct?

A. Yes.

Q. You're not opining that simply because Professor Feinstein took a different approach, his results are unreliable, are

you?

A. No. I point to the way in which he has done -- he has used methodology that he has never before employed, and that methodology leads to an unreliable and biased conclusion. Those are the differences that I pointed out not for the sake of difference.

Q. Because economists can and do use different approaches, depending on the facts and circumstances in the case; correct?

A. In general, yes.

Q. In fact, you've done so in cases, haven't you?

A. I'm sure I tailor my approach depending on facts and circumstances.

Q. And let me talk about some of those. In prior cases where you've addressed a plaintiff expert report on market efficiency, you performed various analyses, such as put-call parity, serial correlation, and the Y-filter test; correct?

A. In some cases, I have.

Q. And you've used the results of each of those tests in prior cases to support

your opinion of market inefficiency; correct?

A. Or the other way around, depending on the results. I've used the results of those tests to explain my conclusion in favor of market efficiency as well.

Q. In the AIG case, you performed all three of those tests to support an opinion regarding market inefficiency; correct?

A. In part, yes.

Q. And the Court went on and certified that class; correct?

A. It's my understanding that the case was settled before a decision on market efficiency question.

Q. Let's get back to those tests: put-call parity, serial correlation, and Y-filter. It's not impossible to perform those tests in this case, is it?

A. I assume so.

Q. You assume it's not impossible?

A. Yes.

Q. If those tests were applied in this case and showed -- or supported a claim of market inefficiency, that would be strong

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empirical evidence of market inefficiency; correct?

MR. FRANK: Objection.

A. Not necessarily. The test of market efficiency for this purpose is the cause-and-effect factor. Those tests may or may not add to the evidence depending on how they are conducting their results, et cetera.

Q. My question was: If you perform put-call parity, serial correlation, and Y-filter tests, and the results of those tests suggested market inefficiency, that would be strong empirical evidence of market inefficiency; correct?

MR. FRANK: Objection.

A. Again, it depends on the results. The serial correlation and Y-filter tests are actually tests of weak form of market efficiency, and those should be foundational tests before one does the test of semi-strong form of market efficiency, which Dr. Feinstein did not do.

If the evidence shows that the market was not weak form efficient, then the

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inquiry should end there. Because regardless of anything you find in an event study, there is no basis to conduct that event study. The link between cause and effect is broken. Because you don't know cause on a certain date is being associated with effect that is contemporaneous in absence of weak form market efficiency.

If the weak form market efficiency tests do not show a violation of weak form market efficiency, then doing a test like put-call parity could provide supplemental evidence, but there is no substitute to conducting a well carried out cause-and-effect test, especially for reliance purposes, before you conclude the market to be semi-strong form efficient.

Q. I think we have a little misunderstanding here, Dr. Bajaj. I'm not talking about what Professor Feinstein would need to do to show market efficiency. I'm talking about what you could do to show that the market was not efficient.

And so one of the things that

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you've just talked about, as I understood it, was that if you were to perform serial correlation tests and Y-filter trading momentum tests, and they were to show that the market was not even weak form efficient, then, by definition, it could not be the semi-strong efficiency that you indicate in your view is required for market efficiency in this case; correct?

A. Yes.

Q. So had you performed those tests and found that the market was not even a weak form efficiency, that would be strong empirical evidence of market inefficiency in this case; correct?

MR. FRANK: Objection.

A. I don't want to argue with the qualifier "strong." It would be evidence of market inefficiency in the semi-strong form sense.

Q. I want to turn a little bit to Professor Feinstein's Z-test. Now, you would disagree that the Z-test is a generally accepted and widely used statistical test for

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testing incidences in two populations; correct?

A. For testing whether two proportions and two subsamples are the same. That test has been around decades and widely used for that purpose.

Q. And can you turn in your report to page 40, note 105. You say, "For example, if we assume a thousand news dates and a thousand non-news dates and that 5%, or 50, of the non-news dates are statistically significant, then Dr. Feinstein's Z-test would only require 68 of the news days (or 6.8%) to be statistically significant, to conclude there was a statistically significant difference and therefore that the market was efficient according to his Z-test."

Do you see that?

A. Yes.

Q. Assuming you have 50 non-news dates and 68 news dates, as suggested in your example, with a statistically significant reaction, the results of that test are

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statistically significant; correct?
A. Well, the only thing that is statistically significant, given the sample sizes of 1000 news dates, 1000 non-news dates, and 50 non-news dates being statistically significant, a proportion 6.8 percent of news dates is higher than a proportion of 5 percent of non-news dates statistically speaking. The two proportions are statistically different. That's all that experiment will show you.
Q. Couldn't you -- you could reject the null hypothesis that the incidence rate in population 1 is the same as the incident rate in population 2, couldn't you?
A. Again, ignoring the fact that incident rate in this context should also consider direction, which Z-test does not do, it is true that with a sample size of a thousand, 6.8 percent incidence rate is statistically larger than 5 percent incidence rate.
Q. And a correct conclusion from a statistical standpoint would be that the

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incidents in these two -- or the incident rates in these two samples are statistically significantly different at the 95 percent confidence level; correct?
A. Again, ignoring the context, ignoring the direction, if it was, for example, a thousand men and a thousand women and 68 of the thousand men liked watching baseball and only 50 of a thousand women liked watching baseball on television, then you could statistically reliably conclude that a larger fraction of men like watching baseball on television.
Q. There would be a statistically significant difference at the 95 percent confidence level?
A. Yes.
Q. You discussed various -- what you label as "flaws" in Professor Feinstein's Z-test. I want to talk to you about a few of them.
The first one is -- you allege as Flaw Number 1 -- a small sample size; is that correct?

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MR. FRANK: Objection.
Q. It's on page 44 of your report.
MR. FRANK: Objection.
A. You said page 44?
Q. I believe so. Page 44 towards the bottom, Flaw 1.
A. So under the heading of, "Statistical Errors and Assumptions" that bias is results in favor of finding market efficiency, this is Flaw Number 1.
Q. And the flaw you allege there is too small a sample size; correct?
A. Well, I wouldn't use the word "alleged." The flaw that I discuss there is too small a sample size for the test to be reliable according to the very authorities that the test is based on.
Q. Well, let me stick with allegation. Are there statistical tests to determine whether the results of a particular statistical analysis is robust despite a small sample size?
MR. FRANK: Objection.
A. There are alternative statistical

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tests, other than Z-test, that are not subject to the sample size -- minimum sample size requirements that Dr. Feinstein's Z-test fails to meet.
Q. You've applied tests before, statistical tests to determine whether the results of a particular analysis are robust regardless of the sample size; correct?
MR. FRANK: Objection.
A. Actually, tests of robustness of sample size is a very different issue than a different test that does not have the same kind of minimum sample size requirements. And that's the distinction I'm trying to draw.
And if you're asking this in the context of various tests that Dr. Feinstein submitted in his deposition, that he claimed to be robustness tests, I think a more accurate characterization would be those are different tests. They are not tests of robustness of Z-test, per se.
Q. Would you agree that the Fisher Exact test is a test to test the robustness

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of a small sample size?
A. That is incorrect. And that's why I'm trying to be careful in my answer. Fisher Exact test is a test that can be used to test statistical difference in proportion in situations where you have sample sizes that are lower than the minimum sample size required of Z-test.
Q. Then I'm misunderstanding something.
So you can apply a Fisher Exact test, where you have minimum sample sizes that are lower than what would otherwise be required in a Z-test. Is that what you're saying?
MR. FRANK: Objection.
A. Yes. The requirements of minimum sample sizes for Z-test do not apply when you're conducting a different test called Fisher Exact test. It's a misnomer to call Fisher Exact test a test of robustness of Z-test, per se.
Q. But you seem to be saying, unless I'm misunderstanding, which is entirely

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possible, that you can use the Fisher Exact test and use a smaller sample size in the Z-test than what would otherwise be normally be required?
MR. FRANK: Objection.
A. I'm sorry. I lost your verbiage, so maybe you can repeat it.
Q. That if you have -- let me just try to flip it around.
You're performing a Z-test. You have a smaller sample size than normally is required or is optimal. Can you use a Fisher Exact test to reach the conclusion that the results of your Z-test are still tenable?
A. So --
MR. FRANK: Objection. I'm sorry.
You can answer.
A. If you have a sample size that's smaller than minimum required for Z-test, you may, in those situations, sometimes conduct Fisher Exact test, because that test does not have similar minimum size requirements.
If you've done a Z-test inappropriately and you've gotten a result,

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and then you run a different test, it's a misnomer to call it a robustness test. It's a test that's allowed to be applied for smaller samples. And you obtain a result.
You can take the latter result as not being subject to the small sample criticism. As a matter of logic, you can't confirm a result of a test which is inappropriately applied. You did a different test. That's the test you should have done. It's not a robustness check. It's a different test.
Q. All right. But you're not quarreling with the fact that the different tests that were applied by Professor Feinstein had significant results, they would support the same conclusion that was reached by the Z-test?
MR. FRANK: Objection.
A. That would be an overstatement. As I explained at length in my report, while that may be true in a situation where he dummies out the dates where he includes November 20th, where he pulls the significant

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and nonsignificant dates in two different periods with very different regime, as he acknowledges, in that case, with all those errors, Fisher Exact test, that is not subject to the small sample size criticism, per se, did find statistically different proportions, which does not speak to that test being correctly applied.
It does not speak to the results being significant, had the test been conducted with other errors corrected, as Professor Feinstein himself has applied the test in different situations in his earlier reports.
MR. FRANK: Bill, can we take a brief biobreak here?
MR. MARKOVITS: Sure.
MR. FRANK: Thank you.
THE VIDEOGRAPHER: The time is 15:55. We're off the record.
(Recess taken at 3:55 p.m. to 4:07 p.m.)
THE VIDEOGRAPHER: The time now is 16:07. We're on the record.
BY MR. MARKOVITS:

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Q. Dr. Bajaj, could you turn to page 58 of your report, where you have titled something called "Flaw 7," where you allege that there's a flaw because Dr. Feinstein choose -- chose to dummy out certain variables.
Do you see that?
A. Yes.
Q. You agree that using dummy variables is the economically appropriate methodology?
MR. FRANK: Objection.
A. Not always.
Q. You're not saying it's an invalid -- invalid approach; correct?
A. I'm saying, in this case, it is an invalid approach.
Q. Well, when I read your report here, you say it's -- "This approach, while not necessarily invalid in the abstract, is inconsistent with the model he used in the Petrobras case."
Do you see that?
A. Yes.

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Q. And where do you allege that it's invalid as opposed to just inconsistent with a prior approach?
MR. FRANK: Objection.
A. In that it is outcome determinative. And given the hypothesis he is testing, it would be a better approach not to dummy out the dates. It is therefore not the correct approach in this circumstance.
Q. Okay. I'm not following the logic of that.
Why is it not the correct approach to use in this case, because it would have resulted in a different outcome?
MR. GOLDFARB: Objection.
A. Well, for one, when you dummy-out dates that, on average, have higher volatility, you artificially lower the standard error. And in this case, it is that artificial lowering of the standard error that causes enough of his eight or nine dates to be become statistically significant to give the result that he then reports.
Q. And where in your report does it

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suggest that this was a flaw because it lowered the standard error?
A. It does when it discusses that just changing the single aspect of his model would make the statistical significance of his result disappear. And I also provide results of regression with and without dummying the dates to show how different the standard error is.
Q. And is it often the case that there is a difference in results where you dummy out or do not dummy out certain variables?
MR. FRANK: Objection.
A. I don't know if it is often the case. It can be the case.
Q. Could you turn to page 61 of your report. You allege that there's, Flaw 9, Dr. Feinstein failed to correct for volatility change in February of 2007.
Do you see that?
A. Yes.
Q. In your first report you criticized Dr. Hallman for failing to address

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a structural break on August 9th, 2007; correct?
A. Yes.
Q. You said nothing in that first report about a structural break in February of 2007?
A. Correct.
Q. And that finding in your first report was based off of the VIX volatility index in Freddie Mac's implied option volatility; correct?
A. I don't remember. As I said, I haven't reviewed that result -- report in a while, but I can take your representation for it.
Q. Whatever analysis you did in your prior report, it did not show a structural break in February of 2007; correct?
MR. FRANK: Objection.
A. I was analyzing in that report the difference in volatility between Dr. Hallman's estimation period, which was prior to the beginning of the class period, relative to the class period. I did not

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focus on an in-sample during class period regression analysis in that case, because that's the not what Dr. Hallman had put forth. Here I did, because it was responsive to what Dr. Feinstein did.

Q. Didn't you testify earlier in this action that the volatility prior to August 9th, 2007, was almost identical to the volatility during the control period and then it spiked up beginning on August 9th?

A. I recall something like that comparing the preclass period control period. That was the case in that matter to volatility prior to August 9th during the class period. I did not compare different intervals within the class period in an in-sample context.

Q. Dr. Bajaj, have there ever been motions made to exclude all or part of your testimony in a case?

A. Yes.

Q. Have any of those been successful?

A. On two occasions, the Court acted on those motions.

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Q. In which two cases?

A. One was Febreze Toray v SEC, and the second was Bank of America v Bear Stearns Asset Management.

Q. And in both of those cases, all or a part of your opinions were excluded?

MR. FRANK: Objection.

A. In the first case, the Court narrowed the scope of my opinion. And in the second case, the Court ruled that my opinion would not be consistent with the way she viewed what I was measuring.

Q. Are you aware that Dr. Gompers has issued a report in this case?

A. Yes.

Q. Do you know Dr. Gompers?

A. Only by name.

Q. You've never worked with him on a matter before?

A. Not directly. We may have been both involved in the same matter on the same or opposite sides, but I've not worked with him.

Q. Did you review his report in this

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case?

A. I looked at it, but I did not review it. Maybe spent a minute or two.

Q. Did you talk with Dr. Gompers about this case at all?

A. No.

MR. GOLDFARB: Objection.

Q. Did you talk with anybody about Dr. Gomper's report?

MR. FRANK: Objection.

A. No.

Q. From your review of Dr. Gomper's report, are you aware that his report addresses the issue of classwide damages?

A. I understand that to be the case.

Q. Have you, in other matters, addressed the issue of classwide?

A. Yes.

Q. In what matters?

A. I don't know that I can tell you from memory alone. But in a recent matter, in the Allergan case, I opined on classwide damages among other issues.

THE REPORTER: "... I opined,"

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what?

A. I opined on classwide damages among other issues.

Q. And that was on behalf of a Plaintiff; correct?

A. I was engaged by Plaintiff's counsel in that matter.

Q. And have you been engaged by any defense counsel in cases to opine on damages?

MR. FRANK: Objection.

A. Yes.

Q. Okay. And have those engagements included opining on the ability of -- or at the class certification stage to show classwide damages?

MR. FRANK: Objection.

A. I don't recall, other than, of course, in the Allergan case.

Q. Have you had any discussions -- or did you have any discussions with regard to providing any opinions relating to classwide damages in this case?

MR. FRANK: Objection.

A. No.

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MR. MARKOVITS: Jason, I know this may sadden you, and, particularly Frank, but if we take a short break, I believe I can wrap up quickly, if not be done now.

MR. FRANK: Very good.

THE VIDEOGRAPHER: The time now is 16:18 We are off the record.

(Recess taken at to 4:18 to 4:34 p.m.)

THE VIDEOGRAPHER: The time now is 16:34. We're on the record.

MR. MARKOVITS: Dr. Bajaj, I have no further questions at this time. I understand your counsel may have a few for you, and I may have to ask you some as a follow-up, but for now I am done, for now. Thank you.

EXAMINATION

BY MR. FRANK

Q. Good afternoon, Dr. Bajaj.

A. Good afternoon.

Q. Dr. Bajaj, do you recall being asked questions by Mr. Markovits regarding levels of statistical significance?

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A. Yes.

Q. And you understand -- strike that.

What level of statistical significance did Dr. Feinstein use in his report?

A. Ninety-five percent.

Q. Is that a standard level of statistical significance in your profession?

A. Yes.

Q. Is that a widely accepted level of statistical significance in your profession?

A. Yes.

Q. Now, is there any support in the academic literature in your field for using a level of statistical significance of 51 percent to assess market efficiency?

A. No.

Q. Is there any support in the academic literature for using a level of statistical significance of less than 90 percent to assess market efficiency?

A. No.

Q. Are you aware of any cases where a court has relied upon an expert who used a

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level of statistical significance of less than 90 percent to assess market efficiency?

A. No.

Q. If Dr. Feinstein had used a level of statistical significance of 51 percent, would that have affected your opinions or the basis for your opinions in any way?

A. No.

Q. Would you have criticized Dr. Feinstein for using a level of statistical significance of 51 percent?

A. Yes.

Q. Why?

A. Because it's not an accepted standard, and I've never seen another expert use such a standard.

MR. FRANK: I have no further questions at this time.

MR. MARKOVITS: Surprisingly, nor do I.

THE VIDEOGRAPHER: The time now is 16:37.

MR. FOTIADES: This is Adam Fotiades. We would like to get an

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electronic count of the transcript only. We've been receiving hard copies, and I just -- an hour or so ago I sent an email to someone at your firm saying we do not want a hard copy going forward, electronic copy but not hard.

(Deposition concluded at 4:38 p.m.)

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COMMONWEALTH OF MASSACHUSETTS
SUFFOLK, SS.

I, Sandra A. Deschaine, Registered Professional Reporter and Notary Public within and for the Commonwealth of Massachusetts at large, do hereby certify:

That MUKESH BAJAJ, PH.D., the witness whose deposition is hereinbefore set forth, was duly sworn by me and that such deposition is a true record of the testimony given by such witness; that the witness is hereby reading and signing.

I further certify that I am not related to any of the parties to this action by blood or marriage and that I am in no way interested in the outcome of this matter.

IN WITNESS WHEREOF, I have hereunto set my hand this 7th day of October, 2017.

____

Sandra A. Deschaine, CSR, RPR, CLA
My Commission Expires
July 5, 2024

MUKESH BAJAJ, PH.D.

ERRATA SHEET FOR THE TRANSCRIPT OF:

Case Name: Ohio Public Employees Retirement System vs. Federal Home Loan Mortgage Corporation, et al.
Dep. Date: September 26, 2017
Deponent: Mukesh Bajaj, Ph.D.

CORRECTIONS:

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Mukesh Bajaj. Ph.d.

SUBSCRIBED AND SWORN BEFORE ME
THIS____DAY OF____________,2017

MUKESH BAJAJ, PH.D.

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